

### **3. EXPOSURE MONITORING AND SAMPLING**

The potential for exposure to chemical, radiological, and physical hazards exists during ICDF operations and affects all ICDF operations personnel who handle, store, transport, and conduct disposal or decontamination activities. Refinement of work control zones (see Section 7), use of engineering and administrative controls, worker training, and wearing PPE provides the mitigation strategy for these hazards. Monitoring and sampling will be used during project tasks to (1) assess the effectiveness of these controls, (2) determine the type of PPE needed for individual tasks, (3) determine personnel exposures, and (4) determine the need for upgrading and downgrading of PPE as described in Section 5. Monitoring with direct-reading instruments will be conducted as deemed appropriate to provide RadCon and IH personnel with real-time data to assess the effectiveness of these control measures.

Table 3-1 lists the tasks and hazards to be monitored and the monitoring instrument category. Table 3-2 lists the instrument category and description. Table 3-3 provides action levels and associated responses for specific hazards.

#### **3.1 Action Limits**

Action limits are one-half or 50% of the exposure limits identified in Table 3-3 to serve as the initial limits for specific ICDF operations. Monitoring results at or above an action limit, identified through exposure monitoring, will initiate additional evaluations including consideration for improved engineering controls, administrative controls, reevaluation of PPE, and probable need for additional exposure monitoring based on the IH's recommendations. Action limits may be adjusted based on changing site conditions, exposure mitigation practices, and PPE levels.

RadCon and IH personnel will conduct initial and periodic monitoring of ICDF operations with direct-reading instruments, collect swipes, and conduct full- and partial-period air sampling, as deemed appropriate, in accordance with the JSAs and other guidelines. As new ICDF processes or hazards are introduced, they will be evaluated and controlled in accordance with applicable company policies and procedures.

The potential for exposure to radiological and nonradiological hazards exists during ICDF operations and affects all ICDF operations personnel who handle, store, transport, and conduct disposal or decontamination activities. Refinement of work control zones, engineering and administrative controls, worker training, and the use of protective equipment will mitigate most of these hazards.

Industrial hygiene and RadCon personnel will conduct monitoring with direct reading instrumentation, collect contamination control swipes, and conduct full- and partial-period air sampling, as deemed appropriate in accordance with the applicable MCPs, OSHA substance-specific standards, and as stated on ICDF operational RWPs. Instrumentation listed on Table 3-2 will be selected based on the site-specific conditions and contaminants associated with project tasks. RadCon and IH will be responsible for determining the best monitoring technique for radiological and nonradiological contaminants (respectively). Safety hazards and other physical hazards will be monitored and mitigated as outlined in Section 2.

Table 3-1. Tasks and hazards to be monitored, frequency, and monitoring instrument category.

Tasks	Hazard(s) to be Monitored <sup>a</sup>	Instrument Category to be Used
Waste loading	Radiation Exposure—(alpha, beta, gamma)	1
	Radiation and Contamination—(alpha, beta, gamma)	2
	Chemical constituents—organic vapors, lead, cadmium	3, 4
	Dust (inhalable and respirable)—silica (area and personal)	3, 5
	Hazardous noise	6
	Ergonomics, repetitive motion, lifting	7
	Heat and cold stress	8
Waste transportation at site	Radiation Exposure—(alpha, beta, gamma)	1
	Radiation and Contamination—(alpha, beta, gamma)	2
	Dust (inhalable and respirable)—silica (area)	4, 5
Waste offloading in cells	Radiation Exposure—(alpha, beta, gamma)	1
	Radiation and Contamination—(alpha, beta, gamma)	2
	Chemical constituents—organic vapors, lead	3, 4
	Dust (inhalable and respirable)—silica (area and personal)	3, 5
	Hazardous noise	6
	Ergonomics, repetitive motion, lifting	7
	Heat and cold stress	8
Cell grading operations	Radiation Exposure—(alpha, beta, gamma)	1
	Radiation and Contamination—(alpha, beta, gamma)	2
	Dust (inhalable and respirable)—silica (area)	4, 5
Heavy equipment operations	Dust (inhalable and respirable)—silica (area and personal)	4, 5
	Radiation Exposure—(alpha, beta, gamma)	1
	Radiation and Contamination—(alpha, beta, gamma)	2
	Hazardous noise	6
	Ergonomics, repetitive motion, lifting	7
Decontamination of equipment	Radiation Exposure—(alpha, beta, gamma)	1
	Radiation and Contamination—(alpha, beta, gamma)	2
	Chemical constituents—organic vapors, lead, cadmium (metals)	3, 4
	Hazardous noise	6
	Ergonomics, repetitive motion, lifting	7
	Heat and cold stress	8

a. Monitoring and sampling frequency will be determined by project Industrial Hygiene and Radiological Control personnel based on specific tasks and site conditions.

Table 3-2. Monitoring instrument category and description.

Instrument Category	Instrument Category Number Description <sup>a</sup>
1	<p>Eberline RO-20 ion chamber or equivalent</p> <p>SAIC PD-3I Electronic Dosimeter or equivalent</p> <p>Ludlum Model 3 with either the Alpha 43-92, the Beta / Gamma 44-9 probes or equivalent</p> <p>Eberline PCM-1B whole body monitor or equivalent</p> <p>Facility Specific Internal Dosimetry Program</p> <p>Continuous air monitor (CAM)—ALPHA 6-A-1 (in-line and radial sample heads, pump, RS-485) or equivalent (as required)</p> <p>CAM (beta)—AMS-4 (in-line and radial head, pump RS-485) or equivalent (as required)</p> <p>Grab sampler—HI-Q CF-995B Hi Volume Air Sampler or equivalent.</p>
2	<p>Eberline RO-20 Ion Chamber dose rate instrument or equivalent</p> <p>Ludlum Model 3 with either the Alpha 43-92, the Beta / Gamma 44-9 probes or equivalent</p> <p>Ludlum model 3030 Alpha Beta sample counter or equivalent</p> <p>Eberline PCM-1B whole body monitor or equivalent.</p>
3	<p>(Organic vapor) Direct reading instruments (photoionization detector, flame ionization detector, or infrared detector) detector tubes or grab samples</p> <p>(Dust) Direct-reading instrument (miniram).</p>
4	<p>(Organic vapors and lead) Personal sampling pumps with appropriate media for partial and full period sampling using National Institute for Occupational Safety and Health (NIOSH) or Occupational Safety and Health Administration-validated methods.</p>
5	<p>(Silica dust, respirable) NIOSH 7500 or equivalent, personal sampling pump, 10-mm cyclone, full-period sampling.</p>
6	<p>American National Standards Institute (ANSI) Type S2A sound level meter or ANSI S1.25-1991 dosimeter (A-weighted scale for time-weighted average dosimetry, C-weighted for impact dominant sound environments).</p>
7	<p>Observation and ergonomic assessment of activities in accordance with applicable company policies and procedures and American Conference of Governmental Industrial Hygienists threshold limit value.</p>
8	<p>Heat stress—wet-bulb globe temperature, body weight, fluid intake.</p> <p>Cold stress—ambient air temperature, wind chill charts.</p>
a. Equivalent instrumentation other than those listed may be used.	

Table 3-3. Action levels and associated responses for ICDF operational hazards.

Contaminant/Agent Monitored	Action Level	Response Taken if Action Levels are Exceeded
Nuisance particulates (not otherwise classified)	>10 mg/m <sup>3</sup> (inhalable fraction) >3 mg/m <sup>3</sup> (respirable fraction)	<ol style="list-style-type: none"> <li>1. Move personnel to upwind position of source and close equipment cab windows and doors.</li> <li>2. Use wetting or misting methods to minimize dust and particulate matter.</li> <li>3. <u>IF</u> wetting or misting methods prove ineffective, <u>THEN</u> don respiratory protection<sup>a</sup> (as directed by the IH).</li> </ol>
Nonradiological airborne contaminant	Based on one-half or 50% of the most conservative individual contaminant exposure limit and OSHA 29 CFR 1910 or 1926 substance-specific requirements.	<ol style="list-style-type: none"> <li>1. Verify engineering control operation.</li> <li>2. Reposition personnel to upwind position of source (close equipment cab windows/doors as applicable).</li> <li>3. Use alternative methods to minimize source airborne generation.</li> <li>4. <u>IF</u> engineering and administrative controls do not control contaminant below exposure limit, <u>THEN</u> reevaluate engineering/administrative controls or don respiratory protection<sup>a</sup> (as directed by IH).</li> </ol>
Hazardous atmosphere	As defined by applicable company policies and procedures or based on one-half or 50% of the individual contaminant exposure limit, lower explosive limit (LEL), oxygen content, etc.	<ol style="list-style-type: none"> <li>1. Measure atmosphere prior to initiating operation or personnel entry and verify specific limit or condition has been met (e.g., &lt;LEL).</li> <li>2. Utilize engineering controls to maintain safe atmosphere/below specified limit.</li> <li>3. <u>IF</u> engineering control fails to control contaminant below safe atmospheric/exposure limit, <u>THEN</u> stop operation and evacuate personnel until safe atmosphere/specified limit can be achieved.</li> </ol>

Table 3-3. (continued).

Contaminant/Agent Monitored	Action Level	Response Taken if Action Levels are Exceeded
Hazardous noise levels	<85 dBA 8-hour TWA, <83 dBA 10-hour TWA	No action.
	85 to 114 dBA	Hearing protection required to attenuate hazard to below 85 dBA for 8-hour TWA or 83 dBA for 10-hour TWA (device noise reduction rating [NRR]).
	(a) >115 dBA (b) >140 dBA	(a) Isolate source, evaluate NRR for single device, double protection as needed. (b) Control entry, isolate source, only approved double protection worn.
Radiation field	<5 mrem/hour	No action, no posting required.
		ICDF complex posted as a "CONTROLLED AREA" - Areas established to warn individuals that they are entering areas controlled for radiation protection purposes. Individuals who enter only controlled areas without entering radiological areas or radioactive material areas are not expected to receive a total effective dose equivalent (TEDE) exceeding 100 millirem in a year.
	> 0.005 rem/hr and ≤ 0.1 rem/hr at 30 cm > 0.1 rem/hr at 30 cm and	Post as "CAUTION - RADIATION AREA" "TLD and RWP Required For Entry" <b>Posted as: "DANGER - HIGH RADIATION AREA"</b>
Radiological Contamination	≤ 500 rad/hr at 100 cm	"TLD, Supplemental Dosimeter, and RWP Required for Entry"
	Contamination Area (dpm/100 cm <sup>2</sup> ) > 1 time but ≤ 100 times RCM Table 2-2	Post as "Contamination Area" — "CAUTION, CONTAMINATION AREA" "RWP Required for Entry"
	"High Contamination Area"	Post as "High Contamination Area" —
	Contamination levels (dpm/100 cm <sup>2</sup> ) > 100 times RCM Table 2-2	"CAUTION HIGH CONTAMINATION AREA"
		"RWP Required for Entry"

Table 3-3. (continued).

Contaminant/Agent Monitored	Action Level	Response Taken if Action Levels are Exceeded
Airborne radioactivity	Airborne concentrations ( $\mu\text{Ci/cc}$ ) above background: (1) are $>$ the applicable DAC values, or (2) could result in an individual (w/o respirator) receiving an intake $>$ 12 DAC-hrs in a week.	<b>Post as “Airborne Radioactivity Area” —</b>  <b>“CAUTION, AIRBORNE RADIOACTIVITY AREA”</b>  <b>“RWP REQUIRED FOR ENTRY”</b>
DAC = derived air concentration RCM = Radiological Control Manual a. Level C respiratory protection will consist of a full-face respirator equipped with a high-efficiency particulate air filter cartridge as prescribed by the project Industrial Hygiene and Radiological Control personnel (based on contaminant of concern). See Section 5 for additional Level C requirements. b. As listed in applicable company manuals.		

### **3.1.1 Industrial Hygiene Area and Personal Monitoring and Instrument Calibration**

The assigned ICDF IH will conduct full- and partial-period sampling of airborne contaminants and monitoring of physical agents at a frequency deemed appropriate based on direct-reading instrument readings and changing site conditions. When conducted, all air sampling will be conducted using applicable National Institute of Occupational Safety and Health (NIOSH), OSHA, or other validated method. Both personal and area sampling and monitoring may be conducted.

Various direct-reading instruments may be used to determine the presence of nonradiological and other physical agents. The frequency and type of sampling and monitoring will be determined by ICDF operating conditions, direct-reading instrument results, observation, professional judgment, and in accordance with the applicable company policies and procedures.

All monitoring instruments will be maintained and calibrated in accordance with the manufacturer's recommendations, existing IH protocol, and in compliance with the applicable subcontract. Direct reading instruments will be calibrated, at a minimum, before daily use and more frequently as determined by the assigned ICDF IH. Calibration information, sampling and monitoring data, results from direct-reading instruments, and field observations will be recorded as stated in Section 12.

### **3.1.2 Area Radiological Monitoring and Instrument Calibration**

Radiation, airborne radioactivity, and contamination monitoring will be conducted during ICDF operations to ensure that personnel are given adequate protection from potential radiological exposure. Instrumentation, or the equivalent, listed in Table 3-2 may be used by RadCon personnel as deemed appropriate. When conducted, monitoring will be performed in accordance with applicable company manuals. The data obtained from monitoring will be used by RadCon personnel to evaluate the effectiveness of ICDF engineering controls, work control documents, procedures, and to verify the effectiveness and adequacy of the radiological control program at the facility.

Radiological Control personnel will use radiation and contamination instrumentation listed in Table 3-2, or equivalent instruments, to monitor radiological conditions. Daily operational and source checks will be performed on instruments in use to ensure they are functioning properly. Accountable radioactive sources will be maintained in accordance with applicable company policies and procedures. Radiological instrumentation will be maintained and calibrated in accordance with existing RadCon protocol, in accordance with applicable companywide (O&M Contractor) manuals, policies, and procedures.

### **3.1.3 Personnel Radiological Exposure Monitoring**

Personal exposure monitoring will be conducted during ICDF operational activities to quantify radiation exposure. This includes the use of external dosimetry, airborne radioactivity monitoring, and internal dosimetry methods as appropriate.

**3.1.3.1 External Dosimetry.** Dosimetry requirements will be based on the radiation exposure potential during ICDF operations. When dosimetry is required, all personnel who enter ICDF operational areas will be required to wear personal dosimetry devices, as specified by RadCon personnel and the RWP, and in accordance with the applicable company manuals.

When RWPs are required for ICDF operations, the Radiological Control and Information Management System (RCIMS) will be utilized to track external radiation exposures to ICDF personnel. Individuals are responsible for ensuring all required personal information is provided to RadCon personnel for entry into RCIMS and logging in when electronic dosimeters are used.

**3.1.3.2 Internal Monitoring.** The purpose of internal dose monitoring is to demonstrate compliance with 10 CFR 835, "Occupational Radiation Protection." The requirement for whole body counts and bioassays will be based on specific ICDF operations or activities and will be the determination of the radiological engineer (RE). If the RE deems bioassays appropriate, requirements will be specified on the RWP, and ICDF personnel will be responsible for submitting required bioassay samples upon request. A bioassay baseline may be required for ICDF personnel that have a previous history working at radiological or hazardous waste facilities.



## 4. ACCIDENT AND EXPOSURE PREVENTION

ICDF operations will present numerous safety, physical, chemical, and radiological hazards to personnel conducting these activities. It is critical that all personnel understand and follow the requirements of this ICDF operations HASP. ICDF engineering controls, hazard isolation, specialized work practices, and the use of PPE will all be implemented to eliminate or mitigate all potential hazards and exposures where feasible. However, all personnel are responsible for the identification and control of hazards in their respective ICDF operational work areas in accordance with Integrated Safety Management System (ISMS) principals and practices. **Hazards shall not be left unmitigated without implementing some manner of controls or abatement (e.g., engineering controls, administrative controls or the use of PPE).** ICDF personnel should use STOP WORK authority in accordance with applicable company policies and procedures where it is perceived that immanent danger to personnel, equipment, or the environment exists.

This HASP is to be used in conjunction with applicable company policies and procedures. Where appropriate, mitigation guidance, JSAs, and RWPs will be incorporated into applicable work controls.

### 4.1 Voluntary Protection Program and Integrated Safety Management

The INEEL safety processes embrace the Voluntary Protection Program (VPP) and ISMS criteria, principles, and concepts to identify and mitigate hazards, thereby preventing accidents. All management and workers are responsible for implementing safety policies and programs and for maintaining a safe and healthful work environment. ICDF operations personnel are expected to take a proactive role in preventing accidents, ensuring safe working conditions for themselves and fellow personnel, and complying with all work control documents, procedures, and permits.

The **ISMS** is focused on the **system** side of conducting operations and **VPP** concentrates on the **people** aspect of conducting work. Both programs define work scope, identify and analyze hazards, and mitigate the hazards. (Additional information on these programs is available on the INEEL Intranet.) BBWI (current primary M&O Contractor) and its subcontractors participate in VPP and ISMS. This HASP includes all elements of both systems. The five key elements of VPP and ISMS and their corresponding HASP sections are as follows:

Voluntary Protection Program	Integrated Safety Management System	Health and Safety Plan Section
Work site analysis	Define work scope	Section 1
	Analyze hazards	Sections 2, 3, 5, and 8
Hazard prevention and control	Develop and implement controls	Sections 2, 3, 4, 5, 7, 10, and 11
Safety and health training	Perform within work controls	Section 6
Employee involvement		Sections 2, 3, and 4
Management leadership	Provide feedback and improvement	Sections 6 and 9

## 4.2 General Safe-Work Practices

Sections 1 and 2 defined the project Scope of Work and associated project-specific hazards and mitigation. The following practices are mandatory for all ICDF operations personnel to further reduce the likelihood of accidents and injuries. All visitors permitted to enter ICDF operational work areas must follow these requirements. Failure to follow these practices may result in disciplinary actions or permanent removal from the ICDF. The project field supervisor and HSO will be responsible for ensuring the following safe-work practices are adhered to at the ICDF:

- Limit ICDF operations areas access to authorized personnel only, in accordance with applicable company policies and procedures for subcontract personnel.
- All ICDF personnel shall have the authority to initiate STOP WORK actions in accordance with applicable company policies and procedures.
- ICDF personnel shall not eat, drink, chew gum or tobacco, smoke, apply cosmetics/sunscreen, or perform any other practice that increases the probability of hand-to-mouth transfer and ingestion of materials in ICDF operations areas. Designated areas may be identified at the discretion of the ICDF management.
- Be aware of and comply with all safety signs, tags, barriers, and color codes as identified in applicable company policies and procedures.
- Be alert for dangerous situations, strong or irritating odors, airborne dusts or vapors, and spills that may be present. Report all potentially dangerous situations to the ICDF operations manager, field supervisor, and/or HSO.
- Avoid direct contact with ICDF waste material. Personnel shall not walk through spills or other areas of contamination and shall avoid kneeling, leaning, or sitting on equipment or surfaces that may be contaminated with waste.
- Be familiar with the physical characteristics of the ICDF, including, but not limited to:
  - Prevailing wind direction(s)
  - Accessibility of fellow personnel, equipment, and vehicles
  - Communications at the ICDF and with INTEC
  - ICDF operations areas and the type of waste stored or disposed of there
  - Major roads and means of access to and from the ICDF
  - Nearest water sources and fire fighting equipment
  - Warning devices and alarms
  - Capabilities and location of nearest emergency assistance.
- Report all broken skin or open wounds to the RCT (RadCon), and the field supervisor, or HSO. An OMP physician must examine all wounds that are contaminated to determine the nature and extent

of the injury (Subcontractor personnel will utilize their own OMP or medical provider for noncontaminated wounds or open skin, BBWI personnel will always be evaluated by the OMP). The RadCon supervisor will determine whether the wound can be bandaged adequately for subsequent entry into a radiological contamination area in accordance with applicable company manuals.

- Prevent releases of hazardous materials. If a spill occurs, personnel must try to isolate the source (if possible, and if this does not create a greater exposure potential) and then report it to the operations manager or field supervisor, RadCon foreman and HSO. Appropriate spill response kits, or other containment and absorbent materials, will be maintained at the ICDF. Spill responder responsibilities are delineated in Section 10.5.2.
- Ensure that electrical equipment, wiring, cables, switches, and current overload protection meet applicable regulations and are maintained in a manner that provides protection for facility personnel from shock hazards and injury and that prevents property damage, in accordance with applicable company policies and procedures. Ground-fault protection will be provided whenever electrical equipment is used outdoors.
- Keep all ignition sources at least 15 m (50 ft) from explosive or flammable environments and use nonsparking, explosion-proof equipment, if advised to do so by safety professionals.
- Additional health, safety, and radiological requirements will be identified in ICDF operations procedures, JSAs, and work packages.

### 4.3 Subcontractor Responsibilities

Where subcontractors are used to support ICDF operations, they are responsible for meeting all applicable INEEL Subcontractor Requirements Manual program requirement document (PRD), VPP, and ISMS flow-down requirements such as those listed on the applicable company forms and manuals, and subcontract general and special conditions. Additionally, subcontractors are expected to take a proactive role in hazard identification and mitigation while conducting operational support tasks. Subcontractors will report unmitigated hazards to the ICDF Subcontract Technical Representative and HSO after taking protective actions (within the documented work controls) and emergency protective actions (e.g., evacuate from the area and warn others).

### 4.4 Radiological and Chemical Exposure Prevention

Engineering controls, administrative controls, and PPE are used where possible to minimize or mitigate exposure to potential chemical, radiological, and physical hazards where engineered controls are not feasible or provide less than adequate mitigation. All ICDF operations personnel are responsible for understanding the hazard identification and mitigation measures necessary to prevent exposures.

#### 4.4.1 Radiological Exposure Prevention—As Low as Reasonably Achievable Principles

ICDF operations personnel radiation exposure will be controlled such that exposures are well below regulatory limits and that there is no radiation exposure without commensurate benefit. **Unplanned and preventable exposures are considered unacceptable.** All ICDF operations will be evaluated with the goal of eliminating or minimizing exposures to levels that are ALARA. All ICDF personnel have the responsibility for following ALARA principles and practices, and personnel working at the ICDF must strive to keep both external and internal radiation doses ALARA by adopting the following practices in

the following sections. Dose rate estimates for ICDF operations are identified in EDF-ER-327, "INEEL CERCLA Disposal Facility Short-Term Risk Assessment."

**NOTE:** The BIC radiological department shall establish work controls, both initially and as an ongoing activity, throughout ICDF operations. These work control efforts will ensure that workers are adequately protected from known sources of radiation in ICDF operations areas. The issuance of RWPs, establishment and posting of Radiologically Controlled Areas (RCAs), and review of higher risk/exposure potential ICDF operational activities by the BIC ALARA committee will form the basis for controlling exposure to ionizing radiation during ICDF operations.

**4.4.1.1 External Radiation Dose Reduction.** Radioisotopes in the waste are found in Table 2-1, and anticipated exposure levels and limits are quantified in RWPs, as needed. RWPs will be written (as required) for ICDF operational activities and will define hold points, required dosimetry, RCT coverage, and radiological limiting conditions in accordance with applicable company policies and procedures. RadCon personnel will participate in the prejob briefing to ensure personnel understand the anticipated radiological conditions to be encountered, and the limiting conditions on the RWP. All personnel will be required to read and acknowledge the RWP requirements before being allowed to sign the RWP (or scan the RWP bar code) and obtain electronic dosimetry.

Basic measures used to reduce external doses include: (1) minimizing time in radiation areas; (2) maximizing the distance from known sources of radiation; and (3) using shielding whenever possible. The following are methods to minimize external doses:

***Methods for Minimizing Time***

- Plan and discuss the tasks before entering a radiation area (including having all equipment and tools prepared)
- Perform as much work as possible outside radiation areas and take advantage of lower dose rate areas (as shown on the radiological survey maps)
- Take the most direct route to the tasks and work efficiently
- If problems occur in the radiation areas, hold technical discussions outside radiation areas, then return to the work area to complete the task
- If stay times are required, know your stay time and use appropriate signal and communication methods to let others in the area know when the stay time is up
- Respond to electronic dosimetry alarms by notifying others in the area and the RCT, and exit the radiation area through the designated entry and exit point
- Know your current dose and your dose limit—DO NOT EXCEED YOUR DOSE LIMIT.

***Methods for Maximizing Distance from Sources of Radiation***

- Use remote-operated equipment or controls where required
- Stay as far away from the source of radiation as possible (extremely important for point sources where, in general, if the distance between the source is doubled, the dose rate falls to one-fourth of the original dose rate)

- Become familiar with the radiological survey map for the area in which work will be performed, as well as high and low dose rate locations, and take advantage of low dose rate areas.

#### ***Proper Use of Shielding***

- Know what shielding is required and how it is to be used for each radiation source
- Take advantage of the equipment and enclosures for shielding yourself from radiation sources
- Wear safety glasses to protect eyes from beta radiation.

**4.4.1.2 Internal Radiation Dose Reduction.** It is likely for internal deposition of radioisotopes to result in an internal radiation dose during ICDF operations. Reducing the possibility for radioactive material to enter the body is key to controlling internal dose. The following are methods to minimize internal radiation dose:

- Know the potential and known ICDF contamination sources and locations, and minimize or avoid activities in those areas
- Wear protective clothing and respiratory protection as identified on the RWP, perform all respirator leak checks, and inspect all PPE before entering contaminated areas or areas with airborne radioactivity
- Use a high-efficiency particulate air (HEPA) filter exhaust system
- When inside contaminated areas, do not touch your face (adjust glasses or PPE) or other exposed skin
- When exiting contaminated areas, follow all posted instructions and remove PPE in the order prescribed (if questions arise, consult RadCon personnel)
- Conduct whole body personnel survey when exiting the contaminated area, then proceed directly to the personnel contamination monitor
- Report all wounds or cuts (including scratches and scrapes) before entering radiologically contaminated areas
- Wash hands and face before eating, drinking, smoking, or engaging in other activities that may provide a pathway for contaminants.

Monitoring for radiation and contamination during protect tasks will be conducted in accordance with the RWP; applicable company policies, manuals, and procedures; and as deemed appropriate by RadCon personnel.

#### **4.4.2 Chemical and Physical Hazard Exposure Avoidance**

**NOTE:** Identification and control of exposures to carcinogens will be conducted in accordance with applicable company policies and procedures.

The ICDF will receive low-level, mixed low-level, hazardous, and TSCA remediation waste. Most of the waste designated for ICDF disposal will be contaminated soil, but debris and CERCLA IDW are also included in the waste inventory.

The primary potential for exposure during ICDF operations will be from chemicals brought to the ICDF Complex in support of operational activities, and from waste handling and disposal operations. ICDF operations personnel will be required to have an MSDS for all chemicals used at the ICDF in accordance with applicable company policies and procedures. Additionally, all chemicals entering the ICDF must be entered into and tracked using the INEEL Chemical Management System (ICMS). ICMS is used for maintaining and tracking the inventory of chemical containers. Basic functionality includes the following:

- Identify container
- Track the location and location changes of a container
- Define the contents of a container at any point in time
- Record distributions into and out of a container
- Record distributions to a waste stream
- Provide a running inventory based on the distributions entered
- Produce regulatory reports from the data entered
- Calculate conversions from one unit of measure to another
- Define container update authorization for a location
- Provide flexibility in how to manage chemicals.

<b>NOTE:</b> ICDF waste streams are not considered chemicals for purposes of entry into ICMS.
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Threshold limit values (TLVs), or other occupation exposure limits, have been established for numerous chemicals and physical agents (e.g., noise, heat, or cold stress) that may be encountered. These exposure limits provide guidelines in evaluating airborne, skin, and physical agent exposures. The TLVs represent levels and conditions under which it is believed that nearly all workers may be exposed day after day without adverse health effects. The TLV-time-weighted average (TLV-TWA) is a time-weighted average concentration for a conventional 8-hour workday and a 40-hour workweek, to which it is believed that nearly all workers may be repeatedly exposed, day after day, without adverse health effects. Action limits (instantaneous concentrations for short time periods) have been established (Section 3) to further reduce the likelihood of exceeding TLVs.

Controls will be employed during ICDF operations to eliminate or mitigate chemical and physical hazards wherever feasible. The hierarchy of controls in order are (1) engineering controls, (2) administrative controls, and (3) PPE. In addition to these controls, use of technical procedures and work orders, hold points, training, and monitoring of hazards will be used as appropriate to reduce exposure potential. Some methods of exposure avoidance include the following:

- Wearing all required PPE, inspecting all pieces before donning, and taping all seams
- Changing PPE if it becomes damaged or shows signs of degrading

- Minimizing time in direct contact with hazardous material or waste
- Doff PPE following standard practices (i.e., rolling outer surfaces in and down) and follow doffing sequence
- Wash hands and face before eating, drinking, smoking, or engaging in other activities that may provide a pathway for contaminants.

## 4.5 Buddy System

The two-person or “buddy system” will be used during some ICDF operations. The buddy system is most often used during operational activities requiring the use of protective clothing and respiratory protection where heat stress and other hazards may impede a person’s ability to self-rescue or in immediately dangerous to life or health (IDHL) situations. The buddy system requires each employee to assess and monitor his or her buddy’s mental and physical well-being during the course of the operation. A buddy must be able to perform the following activities:

- Provide assistance if required
- Verify the integrity of PPE
- Observe his or her buddy for signs and symptoms of heat stress, cold stress, or contaminant exposure
- Notify other personnel in the area if emergency assistance is needed.

The need to use the buddy system during ICDF operations will be determined by the HSO in conjunction with the field supervisor and RadCon personnel.

## 5. PERSONAL PROTECTIVE EQUIPMENT

The ICDF presents numerous potential industrial safety, radiological, nonradiological, and physical hazards to personnel conducting ICDF operations. Applicable company policies and procedures will be used to evaluate all ICDF activities. Anyone entering the ICDF operational areas must be protected against potential safety and exposure hazards. This section provides guidance for the selection and use of PPE to be worn for ICDF operations and contingencies for upgrading/downgrading PPE. The actual PPE requirement for specific ICDF operations and maintenance tasks will be specified in applicable operating procedures, work packages, SWPs, or RWPs.

The purpose of PPE is to shield or isolate personnel from radiological, nonradiological, physical, and/or biological hazards that cannot be eliminated through engineering or other controls. It is important to realize that no one PPE ensemble can protect against all hazards under all conditions and that proper work practices and adequate training will serve to augment PPE to provide the greatest level of protection to workers.

PPE will be selected, issued, used, and maintained in accordance with applicable company policies and procedures. Selection of the proper PPE to protect facility personnel is based on the following:

- Specific conditions and nature of the tasks (e.g., waste handling, heavy equipment operation, decontamination)
- Potential contaminant routes of entry
- Physical form and chemical characteristics of ICDF chemicals or waste contaminants
- Acute and chronic effects from exposure to ICDF chemicals or waste contaminants
- Local and systemic toxicity of ICDF chemicals or waste contaminants
- Potential exposure levels (surface and airborne)
- The hazard analysis (Section 2) evaluation of this HASP.

If radiological contamination is encountered at levels requiring the use of anti-contamination (anti-C) clothing, a task-specific RWP (which will be developed) and applicable company policies and procedures will be followed.

PPE is generally divided into two broad categories: (1) respiratory protective equipment and (2) personal protective clothing. Table 5-1 provides guidance in the selection process for respiratory and protective clothing. This list may be augmented by an SWP or RWP. ICDF operations will be evaluated to determine the most appropriate PPE levels and any modifications required. Potential exposures and hazards associated with ICDF operations will be monitored (as discussed in Section 3) during the course of the project to evaluate changing conditions and to determine PPE level adequacy and modifications.



Table 5-1. Respiratory and protective clothing selection guidance.

Hazard	Level of Protection
<u>Respiratory PPE Selection<sup>a</sup></u>	
Not immediately dangerous to life or health (IDLH) or oxygen-deficient atmospheric conditions. Gaseous, vapor, particulate and/or aerosol chemicals/radionuclides.	Level C—full-facepiece, as determined by IH/RadCon Level B—full-facepiece supplied air respirator with an air-purifying escape cartridge or airhood (bubblehood) HEPA/chemical combination cartridge for concentrations up to the protection factor of an air-purifying full-facepiece respirator and within the assigned DAC <sup>b</sup> value
IDLH or oxygen-deficient atmospheric conditions. Gaseous, vapor, particulate and/or aerosol chemicals/radionuclides.	Level B—full-facepiece, supplied air respirator with an escape-only SCBA <sup>c</sup> or Level A—SCBA
<u>Protective Clothing Selection</u>	
Low atmospheric contaminant levels that are present under stable conditions. No anticipated immersion, splashes, or potential for unexpected contact with radiological or nonradiological contaminants.	Level D
Moderate atmospheric contaminants under relatively stable conditions; liquid splashes or other direct contact that do not have corrosive characteristics or can be absorbed by exposed skin. Low radionuclide contamination and airborne radioactivity levels <sup>d</sup> .	Level C
Moderate to high atmospheric contaminants under unstable conditions; potential for contact with wet, contaminated surfaces/material that can saturate or permeate Level C protective clothing. Moderate radionuclide contamination and airborne radioactivity levels <sup>d</sup> .	Level B (As a contingency only)
High and unknown atmospheric contaminants; potential for contact with substances that pose a high hazard potential to the skin; high potential for splash, immersion, or exposure to unexpected vapors, gases, aerosols, or dusts that may present an IDLH situation readily absorbed through the skin. High radionuclide contamination and airborne radioactivity levels <sup>d</sup> .	Level A <sup>e</sup> (Will not be worn)
<p>a. A HEPA or multi-chemical/HEPA combination cartridge may be selected by IH and RadCon personnel based on specific hazards.</p> <p>b. Derived air concentration (DAC) based on specific radionuclides.</p> <p>c. SCBA = self-contained breathing apparatus.</p> <p>d. Contamination levels and airborne radioactivity as defined by 10 CFR 835.603.d.</p> <p>e. Level A PPE is not anticipated to be required for personnel conducting ICDF operations.</p>	

## **5.1 Respiratory Protection**

In the control of those occupational diseases caused by breathing air that is contaminated with harmful dusts, fogs, fumes, mists, gases, smokes, airborne radioactive materials, sprays, or vapors, the primary objective will be to prevent atmospheric contamination. This will be accomplished as far as feasible by accepted engineering control measures (e.g., enclosure or confinement of the operation, general and local ventilation, and substitution of less toxic materials). When effective engineering controls are not feasible, or while they are being instituted, appropriate respirators will be selected and used.

The level and type of respiratory protection for ICDF operations is operation-specific and relates directly to the airborne hazard for each given operation or activity. Assigned protection factors for respiratory devices are listed in applicable company (M&O Contractor) policies and procedures.

All personnel required to wear respirators shall complete a health examination, applicable training and be fit-tested before being assigned a respirator. Requirements for respirator use, emergency use, storage, cleaning, and maintenance, as stated in the applicable company (M&O Contractor) policies and procedures, shall be followed.

## **5.2 Personal Protective Equipment Levels**

The following sections provide general guidance on typical HAZWOPER levels of PPE. ICDF operational activities will be evaluated to determine the most appropriate PPE that may or may not incorporate traditional HAZWOPER levels. When it is necessary to wear personal protective equipment, PPE requirements will be specified on applicable operational JSAs.

Table 5-2 lists PPE items typically included for the three levels of PPE. PPE level ensemble requirements will be determined by the direction of the ICDF HSO in consultation with the project IH and RadCon personnel and documented on the appropriate work control documents. Such modifications are routinely employed to maximize efficiency and to meet operational-specific needs without compromising personnel safety and health.

### **5.2.1 Level D Personal Protective Equipment**

Level D PPE will only be selected for protective clothing and not for ICDF operations with respiratory or skin absorption hazards requiring whole-body protection. Level D PPE provides no protection against airborne chemical hazards, but rather is used for protection against surface contamination and physical hazards. Level D PPE will only be allowed in areas that have been characterized as having limited contamination hazards.

### **5.2.2 Level C Personal Protective Equipment**

Level C PPE will be worn when the task site (chemical or radiological) contaminants have been well characterized, indicating that personnel are protected from airborne exposures by wearing an air-purifying respirator with the appropriate cartridges, no oxygen-deficient environments exist (less than 19.5% at sea level), and that there are no conditions that pose immediate danger to life or health.

Table 5-2. Levels and options of personal protective equipment.

Personal Protective Equipment Level	Personal Protective Equipment Required <sup>a</sup>	Optional Personal Protective Equipment or Modifications
D	<p>Coveralls or standard work clothes (coverall material type based on industrial hygiene determination).</p> <p>Hard hat (unless working indoors with no overhead or falling debris hazards) meeting ANSI Z89.1 requirements.</p> <p>Eye protection (safety glasses meeting ANSI Z87.1 requirements as a minimum).</p> <p>Hand protection (material based on type of work and hazardous materials being handled).</p> <p>Safety footwear (steel or protective toe and shank) meeting ANSI Z41 requirements, or sturdy leather above the ankle for construction tasks.</p> <p>Highly visible vests for ground personnel exposed to heavy equipment traffic.</p>	<p>Chemical or radiological protective clothing (Tyvek or Saranex) as determined by IH or RadCon.</p> <p>Chemically resistant hand and foot protection (e.g., inner and outer gloves and boot liners).</p> <p>Radiological modesty garments under outer protective clothing (as required by RWP).</p> <p>Any specialized protective equipment (e.g., hearing protection, cryogenic gloves, face shields, welding goggles, and aprons).</p>
C	<p>Level D ensemble with the following respiratory and whole-body protection upgrades:<sup>b</sup></p> <p>Full-facepiece air purifying respirator equipped with a NIOSH-approved HEPA filter or chemical combination cartridge (IH to specify cartridge type),</p> <p>OR</p> <p>An air hood operating at a minimum pressure of 6 cfm, or a full-facepiece supplied air respirator with a 10-minute escape bottle, a SCBA or an escape air-purifying combination HEPA or chemical cartridge (supplied air respirator hose length no more than manufacturer's specification and under no circumstances greater than 91 m [300 ft]),</p> <p>Standard Tyvek (or equivalent) coverall,</p> <p>• OR</p>	<p>Chemical-resistant outer shoe or boot cover (IH or RadCon to specify material).</p> <p>Inner chemical-resistant gloves with cotton liners (as determined by the IH and RWP).</p> <p>Outer chemical-resistant gloves (as determined by the IH).</p> <p>Radiological modesty garments under outer protective clothing (as required by RWP).</p> <p>Any specialized protective equipment (e.g., hearing protection, welding lens, and aprons).</p>

Table 5-2. (continued).

Personal Protective Equipment Level	Personal Protective Equipment Required <sup>a</sup>	Optional Personal Protective Equipment or <b>Modifications</b>
B	Chemical-resistant coveralls (e.g., Tyvek QC, Tychem 7500, or Saranex-23-P) (IH to specify material).	
	Level C ensemble with the following respiratory and whole body protection upgrades: <sup>b,c</sup>	Chemical-resistant outer shoe or boot cover (IH or RadCon to specify material).
	Chemical-resistant coveralls or encapsulating suit (Tyvek QC, Tychem 7500, Saranex 23-C, or equivalent).	Radiological modesty garments under outer protective clothing (as required by RWP).
	Any other chemical or radiological PPE prescribed in site-specific RWP or SWP.	
	<ul style="list-style-type: none"> <li>Chemical-resistant butyl or one-time-use natural latex outer boots (as determined by the IH and RWP).</li> <li>Inner chemical-resistant gloves with cotton liners (as determined by the IH and RWP).</li> <li>Outer chemical-resistant Viton or polyvinyl alcohol gloves (as determined by the IH).</li> </ul>	<b>Any specialized protective equipment</b> (e.g., hearing protection, welding lens, and aprons).
	<b>NOTE:</b> All seams must be taped and secured to prevent skin contact from hazardous substances in a soil, liquid, mist, and aerosolized form.	
A	<ul style="list-style-type: none"> <li>Not anticipated for ICDF operations</li> </ul>	Not anticipated for ICDF operations.

a. The PPE ensemble may be modified by the IH and/or RadCon to provide protection from skin or other physical hazards.

b. Upgrades are determined by the IH in conjunction with other ES&H professionals.

c. Level B and A work will require approval from the ER Program safety, health, and quality assurance manager and coordination with the INEEL fire department.

QC = quality control

**NOTE:** Personnel must inspect all PPE before donning and entry into any work area. Items found to be defective or that become unserviceable during use will be doffed and disposed of in accordance with posted procedures and placed into the appropriate waste stream. The PPE inspection guidance is provided in Table 5-3.

### 5.2.3 Level B Personal Protective Equipment

Level B PPE will be worn when personnel cannot be adequately protected with air purifying respirator because there are high levels of contaminants present, the appropriate respirator cartridges or combination is not available, a significant hazard exists for skin exposure, or IDLH or oxygen-deficient conditions exist. If IDLH conditions do not exist, then an escape air-purifying cartridge may be substituted for the escape bottle.

Table 5-3. Inspection checklist for personal protection equipment.

Personal Protection Equipment Item	Inspection
Respirators (full-facepiece air-purifying and supplied air respirators with escape-only SCBA bottles or escape cartridges)	<p>Before use:</p> <ul style="list-style-type: none"> <li>• Ensure air line matches the air line respirator to be used (black hose).</li> <li>• Inspect air line hose connections (sections of hose) to ensure all are threaded or permanent metal-to-metal connections (no quick disconnect pieces).</li> <li>• Check condition of the facepiece, head straps, valves, connecting lines, fittings, and all connections for tightness.</li> <li>• Check cartridge to ensure proper type or combination is being used for atmospheric hazards to be encountered, and inspect threads and O-rings for pliability, deterioration, and distortion.</li> <li>• Check for proper setting and operation of regulators and valves; <b>check</b> all hose connections back to the breathing-air compressor; <b>check</b> the pressure to the air line station and on individual air line connections to ensure pressure is within required range (in accordance with the manufacturer's specifications).</li> </ul> <p>Before entry into Level B area:</p> <ul style="list-style-type: none"> <li>• Ensure air compressor is providing a minimum of 110 psi when all personnel have air lines hooked up to the compressor manifold.</li> </ul>
Air hoods	<p>Before use:</p> <ul style="list-style-type: none"> <li>• Ensure air line matches the air hood to be used (red hose).</li> <li>• Ensure air hood is within 3-year shelf life (for polyvinyl chloride [PVC] components).</li> <li>• Visually inspect all seams and surfaces for tears and cracks.</li> <li>• Pressurize air hood to check for pinholes or defective seams (no air should leak out when choking clear hood piece).</li> </ul> <p>Before entry into contaminated area:</p> <ul style="list-style-type: none"> <li>• Inspect all air line connections for tight fit (pull connections three times).</li> <li>• Ensure air compressor is providing a minimum of 110 psi when all personnel have air lines hooked up to the compressor manifold.</li> </ul>

Table 5-3. (continued).

Personal Protection Equipment Item	Inspection
Level D, C, and B clothing	<p>Before use:</p> <ul style="list-style-type: none"> <li>• Visually inspect for imperfect seams, nonuniform coatings, and tears.</li> <li>• Hold PPE up to the light and inspect for pinholes, deterioration, stiffness, and cracks.</li> </ul> <p>While wearing in the work zone:</p> <ul style="list-style-type: none"> <li>• Inspect for evidence of chemical attack such as discoloration, swelling, softening, and material degradation.</li> <li>• Inspect for tears, punctures, and zipper or seam damage.</li> <li>• Check all taped areas to ensure they are still intact.</li> </ul>
Gloves	<p>Before use:</p> <ul style="list-style-type: none"> <li>• Pressurize rubber gloves to check for pinholes: blow in the glove, then roll until air is trapped and inspect. No air should escape.</li> </ul> <p>Leather gloves:</p> <ul style="list-style-type: none"> <li>• Inspect seams and glove surface for tears and splitting; verify no permeation has taken place.</li> </ul>

#### 5.2.4 Level A Personal Protective Equipment

Level A PPE is not anticipated for ICDF operations.

### 5.3 Personal Protective Clothing Upgrading and Downgrading

The ICDF HSO, in consultation with the assigned IH and RadCon personnel, will be responsible for determining when to upgrade or downgrade PPE requirements. Upgrading or downgrading PPE based on changing operational conditions (e.g., equipment, waste types, location of tasks) is a normal occurrence. If changing conditions are encountered, work control documents (e.g., work order, RWP, JSA) may need to be updated to reflect these changes or augmented by a SWP. Additional reasons for upgrading or downgrading are listed in the following subsections.

Addition or revision of the type and number of layers of gloves and shoe covers is not considered an upgrade or downgrade of PPE and can be made at the discretion of the IH or RadCon personnel (as long as the change is within the requirements of the BBWI RadCon manual). If additional layers of anti-contamination clothing are desired, it may not result in a change in level of PPE, however, the change should be reviewed by the IH and/or HSO to ensure no heat stress issues are created.

#### 5.3.1 Upgrading Criteria for Personal Protective Equipment

The level of PPE required will be upgraded as needed upon evaluation of the following conditions. When these conditions occur, work will halt until PPE upgrading has been evaluated and implemented as required:

- Identification of new, unstable, or unpredictable site hazards
- Temporary loss or failure of any engineering controls
- Contaminants that present difficulty in monitoring or detecting
- Known or suspected presence of skin absorption hazards
- Identified source or potential source of respiratory hazard(s) not anticipated
- Change in the task procedure that may result in an increased contact with contaminants or meeting any of the criteria listed above.

### **5.3.2 Downgrading Criteria**

The level of PPE will be downgraded as appropriate upon evaluation of the following conditions:

- Elimination of hazard or completion of task(s) requiring specific PPE
- Implementation of new engineering or administrative controls that eliminate or significantly mitigate hazard
- Sampling information or monitoring data that show the contaminant levels to be stable and lower than established action limits
- Elimination of potential skin absorption or contact hazards.

## **5.4 Inspection of Personal Protective Equipment**

All PPE ensemble components must be inspected before use and when in use during ICDF operations in accordance with applicable company policies and procedures. Once PPE is donned, self-inspection will serve as the principal form of inspection. If PPE should become damaged or degradation or permeation is suspected, the individual wearing the PPE will inform others of the problem and proceed directly to the work zone exit point to doff and replace the unserviceable PPE. In addition, all PPE that becomes grossly contaminated or presents a potential source for the spread of such contamination will be required to be decontaminated or replaced.

Table 5-3 provides an inspection checklist for common PPE items. Not all PPE ensemble items may be required for ICDF operational tasks (e.g., air hoods); however, this information is provided as a contingency. Where specialized protective clothing or respiratory protection is used or required, the manufacturer's inspection requirements in conjunction with regulatory or industry inspection practices will be followed. Consult the assigned ICDF IH, safety professional, and RCT about specific PPE inspection criteria.

## **6. PERSONNEL TRAINING**

All ICDF personnel will receive training, as specified in the applicable section of the 29 CFR 1910.120, HAZWOPER standard, the ICDF Implementation Subcontract, DOE, federal, state, and INEEL manuals as applicable. All ICDF training will be developed, conducted, and maintained in accordance with applicable company manuals and the ICDF Implementation Subcontract. Applicable company manuals describe the O&M Contractor processes that ensure the INEEL work force is properly trained to work effectively and safely and ensures that all personnel in the company understand their roles, management's role, and the role of the Training Directorate in training INEEL employees. The ICDF subcontractor(s) will provide their own training implementation documentation and records management process. All training provided by and to the subcontractor will be entered into and tracked on the Contractor's TRAIN database.

The BIC operations directorate (OD) controls all support activities, including training, necessary to operate and maintain the ICDF. The OD is responsible for all aspects of efficient facility operation and maintenance. The OD, through the facility manager, ensures that all members of the work force are properly trained. The OD is also responsible for implementing the ISMS.

### **6.1 Training**

Training personnel assist line management in ensuring that ICDF personnel receive the training necessary to perform their job assignments safely and effectively. The training directorate oversees and coordinates training analysis, design, development, implementation, and evaluation, in close association with responsible management. The training directorate also assists line management in ensuring that employees who require qualification or certification meet the minimum qualification requirements and receive appropriate training. Other activities include tracking and maintaining training records.

Training settings and methods are carefully selected to optimize the trainee's learning experiences. They may include classroom, web-based instruction, self-study, and on-the-job training as appropriate.

### **6.2 Personnel Selection**

Personnel selection for the ICDF complies with the company staffing procedures. Employee position descriptions are used for personnel selection, and the position descriptions identify entry-level requirements for all INEEL personnel. Subcontractor selected employees are reviewed by the contractor to ensure compatibility of qualifications based on submitted resumes for critical positions.

### **6.3 Qualification and Certification Processes**

Qualification requires demonstration and documentation of experience, physical attributes, training, knowledge, and skills necessary to perform a specific job function. Supervisors are qualified by meeting entry-level requirements associated with the supervisory position and by completing applicable facility-specific training conducted by design engineering staff. This ensures that they possess the required knowledge and skills, when combined with their previous education, experience, and training. Positions that require qualification for the ICDF include radiological personnel, heavy equipment operators, shift supervisors, and operators.

Certification is the formal endorsement by facility management of an individual who has completed the qualification(s) and other requirements (e.g., physical examination, written examination,



operational evaluation, oral examination) related to a specific position. Positions that require certification for the ICDF include shift/field supervisor and operator.

## **6.4 Implementation of Training**

The INTEC maintenance manager (or the subcontractor's equivalent position) is responsible for ensuring that crafts and maintenance personnel assigned to work at the ICDF have the skills necessary for their particular craft. The ICDF facility manager (subcontractor's and contractor's FM) is responsible for ensuring that crafts and maintenance personnel are qualified to perform assigned work at the facility.

Facility prejob briefings and facility-specific RCRA, hazard communication, and HAZWOPER training courses satisfy requirements of 40 CFR 264.16(a)(1) and 264.16(c), "Personnel Training." Radiological control personnel assigned to work at the ICDF participate in an ongoing training program in accordance with 10 CFR 835, but will be given ICDF-specific training as well.

The ICDF Implementation Subcontractor is responsible to ensure that personnel have an adequate level of facility knowledge, including a general overview of the facility, facility-specific hazards, safety, and applicable procedures. A thorough analysis of course work and other associated training required for certifications or qualifications will be performed, and a formal continuing training program for ICDF will be developed. Also, shift/field supervisors will be required to communicate lessons learned to each crew at the prejob briefing.

Table 6-1 is a training matrix by position that indicates the training requirement and course name for each full-time or part-time position and for visitors to the ICDF. Individual training plans (ITPs) that reflect required training for individual employees will be developed. The ITPs are revised at least annually or as needed.

Personnel requiring ICDF operation or position-specific qualifications or certifications complete the necessary training before beginning their ICDF activities. As appropriate, a qualified instructor or subject matter expert conducts the training and documents it in accordance with companywide procedures and/or the subcontract.

## **6.5 Training Records**

Training records for ICDF personnel will be kept in accordance with companywide procedures and the subcontract by the BIC Project training organization. Documentation of a qualification or certification is placed in an employee's training file and maintained by the appropriate training organization. Employee experience and employment history records are maintained by Human Resources in personnel files or by the subcontractor for their employees.

## **6.6 Prejob/Post-job Briefings and Safety Meetings**

All ICDF operational activities performed in accordance with companywide and/or subcontract requirement documents will require a prejob briefing conducted by a supervisor. During this briefing, tasks associated with ICDF operations will be outlined, hazards identified, hazard controls/mitigation reviewed, PPE requirements discussed, waste minimization opportunities communicated, and employees' questions answered. Following the completion of operational activities (first performance of new routine operations and after performance of nonroutine operations), a post-job briefing will be conducted with particular emphasis of capturing lessons learned and process improvement for future operations.

Table 6-1. ICDF training matrix by position.

Subject	Requirement	Frequency	Course Number	Operations mgr/Facility Mgr - BBWI	Operations mgr/Facility Mgr - Subcontractor	PM and Oversight - BBWI	Project Management - Subcontractor	System Engnr/Process, Field, Project Eng - BBWI	System Engnr/Process, Field, Project Eng - Sub	EA & WGS Support - BBWI	RCT	Rad Engnr	Administrative Specialist - Subcontractor	SH&Q Oversight - BBWI	HSE/ESH&Q - Subcontractor	Heavy Equipment Operator	Process Oper	JSS/Foreman	Maintenance (electrical/plumbing/mechanical)	Laborer	Trainer - Subcontractor	Occasional & Non-workers	Visitors
<b>Industrial, Chemical, and Radiological Safety Training</b>																							
40-Hour HAZWOPER	29 CFR 1910.120	Initial (Annual)	(Refresher TRN29)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X or Escort	Escort
8-Hour HAZWOPER Supervisor	29 CFR 1910.120	Initial	TRN31	X	X	X	X							X									
INEEL Site Access/Orientation (CBT)		Initial	TRN202	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	Escort
INEEL General Employee Radiological (CBT)	10 CFR 835	2 years	TRN74									X										X	
Radiological Worker 1 (classroom)	10 CFR 835	Initial (2 Yrs)	TRN72 (TRN213 & 185							X		Opt									X	X	

Table 6-1. (continued).

Subject	Requirement	Frequency	Course Number	Operations mgr/Facility Mgr - BBWI	Operations mgr/Facility Mgr - Subcontractor	PM and Oversight - BBWI	Project Management - Subcontractor	System Engr/Process, Field, Project Eng - BBWI	System Engr/Process, Field, Project Eng - Sub	EA & WGS Support - BBWI	RCT	Rad Engr	Administrative Specialist - Subcontractor	SH&Q Oversight - BBWI	HSO/ESH&Q - Subcontractor	Heavy Equipment Operator	Process Oper	JSS/Foreman	Maintenance (electrical/plumbing/mechanical)	Laborer	Trainer - Subcontractor	Occasional & Non-workers	Visitors
Radiological Worker II (classroom; Refresher CBT)	10 CFR 835	Initial (2 Yrs)	TRN70 (TRN211 & 186)	X	X	X	X	X	X	Opt	X	X	X	X	X	X	X	X	X	X	Opt		
Fall Protection At Risk Worker (f )	29 CFR 1926.503(a)(1)	Initial	TRN57											X	X			X	X	f			
Medic First Aid (W/CPR) Basic	29 CFR 1926.50 29 CFR 1910.151	Initial (2 Yrs)	TRN87 (TRN88)	Opt	Opt	Opt	Opt	Opt	Opt		a	a	Opt	Opt	Opt	a	a	a	a		Opt		
Confined Space Entrant (f), Attendant, Job Supervisor	29 CFR 1910.146	Initial	TRN183							X				X	X			X	f	f			
Personal Protective Equipment (CBT)	29 CFR 1910.120	Initial	TRN288	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			

Table 6-1. (continued).

Subject	Requirement	Frequency	Course Number	Operations mgr/Facility Mgr - BBWI	Operations mgr/Facility Mgr - Subcontractor	PM and Oversight - BBWI	Project Management - Subcontractor	System Engr/Process, Field, Project Eng - BBWI	System Engr/Process, Field, Project Eng - Sub	EA & WGS Support - BBWI	RCT	Rad Engr	Administrative Specialist - Subcontractor	SH&Q Oversight - BBWI	HSE/ESH&Q - Subcontractor	Heavy Equipment Operator	Process Oper	ISS/Foreman	Maintenance (electrical/plumbing/mechanical)	Laborer	Trainer - Subcontractor	Occasional & Non-workers	Visitors
Heat Stress (CBT)	29 CFR 1910.120	Initial	TRN606	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Cold Stress (video)	29 CFR 1910.120	Initial	SMTT0010	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			
Stop Work Authority (CBT)	INEEL Procedure	Initial	TRN604	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
Basic Respirator (w/fit)	29 CFR 1910.134(b) (3)	Initial (Annual)	TRN4 (TRN150 & 147)								X	b		b	b	b	b	b	b	b			
LO/TO for Authorized Employee	29 CFR 1910.147 DOE Order 5480.19	Initial (Annual)	TRN14 (TRN725)	***				X	***					****	****		****	****	****	****			
LO/TO for Primary Authorized Employee	29 CFR 1910.147 DOE Order 5480.19	Initial (Annual)	TRN602 (TRN724)	X	X			ST R															

Table 6-1. (continued).

Subject	Requirement	Frequency	Course Number	Operations mgr/Facility Mgr - BBWI	Operations mgr/Facility Mgr - Subcontractor	PM and Oversight - BBWI	Project Management - Subcontractor	System Engr/Process, Field, Project Eng - BBWI	System Engr/Process, Field, Project Eng - Sub	EA & WGS Support - BBWI	RCT	Rad Engr	Administrative Specialist - Subcontractor	SH&Q Oversight - BBWI	HSO/ESH&Q - Subcontractor	Heavy Equipment Operator	Process Oper	JSS/Foreman	Maintenance (electrical/plumbing/mechanical)	Laborer	Trainer - Subcontractor	Occasional & Non-workers	Visitors
LO/TO for Authorized Employee Limited	29 CFR 1910.147 DOE Order 5480.19	Initial (Annual)	TRN663 (TRN726)								X						X		X				
Asbestos Worker	29 CFR 1926.1101 40 CFR 763(a)(2) 40 CFR 763 Subpart G	Annual									d			d	d	d	d						
Asbestos Awareness (CBT)	29 CFR 1926.1101 40 CFR 763(a)(2) 40 CFR 763 Subpart G	Annual	TRN152	c	c	c	c				c	c		c	c	c	c	c				c	
Hearing Conservation				f	f	f	f	f	f		f			f	f	f	f	f	f	f		f	

Table 6-1. (continued).

Subject	Requirement	Frequency	Course Number	Operations mgr/Facility Mgr - BBWI	Operations mgr/Facility Mgr - Subcontractor	PM and Oversight - BBWI	Project Management - Subcontractor	System Engr/Process, Field, Project Eng - BBWI	System Engr/Process, Field, Project Eng - Sub	EA & WGS Support - BBWI	o	RCT	Rad Engr	Administrative Specialist - Subcontractor	SH&Q Oversight - BBWI	o	HSO/ESH&Q - Subcontractor	o	Heavy Equipment Operator	o	Process Oper	o	JSS/Foreman	Maintenance (electrical/plumbing/mechanical)	Laborer	Trainer - Subcontractor	Occasional & Non-workers	Visitors	
HAZMAT																													
employee																													
general																													
awareness																													
training (c)																													
General Employee Training																													
Conduct of		Initial	TRN623		X	X	X	X	X	X		X	X								X					X			
Operations																													
Awareness																													
Conduct of		Initial	TRN869	X																									
Operations																													
Core																													
Conduct of		Initial	TRN477	X																									
Maintenance																													
Work Control																													
Process																													
Overview																													

Table 6-1. (continued).

Subject	Requirement	Frequency	Course Number	Operations mgr/Facility Mgr - BBWI	Operations mgr/Facility Mgr - Subcontractor	PM and Oversight - BBWI	Project Management - Subcontractor	System Engr/Process, Field, Project Eng - BBWI	System Engr/Process, Field, Project Eng - Sub	EA & WGS Support - BBWI	RCT	Rad Engr	Administrative Specialist - Subcontractor	SH&Q Oversight - BBWI	HSO/ESH&Q - Subcontractor	Heavy Equipment Operator	Process Oper	JSS/Foreman	Maintenance (electrical/plumbing/mechanical)	Laborer	Trainer - Subcontractor	Occasional & Non-workers	Visitors
<b>ICDF Operations Training</b>																							
In-Pit Placement/Waste Compaction	ICDF Procedure	Initial	Subcontractor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X		
ICDF Complex ICDF Operations	ICDF Procedure	Initial	Subcontractor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
Waste Transportation	ICDF Procedure	Initial	Subcontractor	X	X	X	X				X	X			X	X							
Inspection, Surveillance, Maintenance	ICDF Procedure	Annual	Subcontractor	X	X	X	X								X	X	X	X	X				
Equipment Specific training – non-RadCon	Based on Equipment to be used	Initial	Subcontractor													X	X		X				
Leachate Management & Loadout	ICDF Procedure	Annual	Subcontractor	X	X	X	X								X		X	X	X	X			

Table 6-1. (continued).

Subject	Requirement	Frequency	Course Number	Operations mgr/Facility Mgr - BBWI	Operations mgr/Facility Mgr - Subcontractor	PM and Oversight - BBWI	Project Management - Subcontractor	System Engr/Process, Field, Project Eng - BBWI	System Engr/Process, Field, Project Eng - Sub	EA & WGS Support - BBWI	RCT	Rad Engr	Administrative Specialist - Subcontractor	SH&Q Oversight - BBWI	HSO/ESH&Q - Subcontractor	Heavy Equipment Operator	Process Oper	ISS/Foreman	Maintenance (electrical/plumbing/mechanical)	Laborer	Trainer - Subcontractor	Occasional & Non-workers	Visitors
ICDF Waste Acceptance Criteria Awareness	ICDF WACS & CERCLA ARARs	Initial	TRN1027	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
INEEL Pollution Prevention Plan (CBT)	ICDF Procedure	Initial	TRN68	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		
ICDF Access	ICDF Procedure	Initial	Subcontractor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ICDF HASP and Job specific JSA			Subcontractor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
ICDF Landfill/Evaporation Pond Orientation	29 CFR 1910.38	Initial	Subcontractor	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X



Table 6-1. (continued).

Subject	Requirement	Frequency	Course Number	Initial	Visitors
Facility					
Emergency					
Information					
Training					
(HASP Section 10 & 11)					
	Operations mgr/Facility Mgr - BBWI				
	Operations mgr/Facility Mgr - Subcontractor				
	PM and Oversight - BBWI				
	Project Management - Subcontractor				
	System Engr/Process, Field, Project Eng - BBWI				
	System Engr/Process, Field, Project Eng - Sub				
	EA & WGS Support - BBWI				
	RCT				
	Rad Engr				
	Administrative Specialist - Subcontractor				
	SH&Q Oversight - BBWI				
	HSO/ESH&Q - Subcontractor				
	Heavy Equipment Operator				
	Process Oper				
	JSS/Foreman				
	Maintenance (electrical/plumbing/mechanical)				
	Laborer				
	Trainer - Subcontractor				
	Occasional & Non-workers				

a. At least two trained personnel should be onsite when working is being performed. The HSO will determine appropriate number of personnel requiring training.

b. Only required if entering area requiring respiratory protection.

c. Required for all personnel entering work zone while asbestos placement work is occurring, but who are not performing asbestos work.

d. Required for ground personnel performing asbestos placement work and work over placed asbestos until 18 inches of compacted cover is in place.

e. If identified as "HAZMAT" employee (i.e., anyone who directly affects hazardous material transportation safety by handling, packaging, labeling, loading, unloading, moving, driving [per 49 CFR 171.81])

f. Required if exposed to the respective risk

OPT = Optional. Can be escorted to cover this or can take alternative training.

Other safety meetings on various subjects will be conducted periodically for personnel to reinforce specific safety topics. A field supervisor or other personnel may conduct safety meetings. Attendance at the safety meetings will be documented on an applicable form and submitted to training personnel for entry into Training Records and Information Network (TRAIN), as required.

ICDF personnel requiring operation-specific or operation-position-based qualifications or certifications training identified on the ITP will complete this training before participating in respective ICDF operations. Additionally, ICDF personnel will be trained on the hazards and mitigation measures for conducting the work in accordance with policies and procedures. This will include training to applicable operating procedures, work packages, JSA(s), RWP, SWP, and other associated permits or facility-specific training. All training will be conducted by a qualified instructor, field supervisor, HSO, and others, as appropriate, based on the nature of the training, and will be documented in accordance with company/subcontract policies and procedures.

## **7. SITE CONTROL AND SECURITY**

The ICDF Complex will be fenced and controlled to prevent unauthorized entry into operations areas. Entry into and exit out of the ICDF area will be controlled through the appropriate use of barriers, signs, and other measures in accordance with applicable company policies and procedures. Personnel not directly involved with ICDF operations shall be excluded from entering the ICDF operations area. Visitors, such as inspectors, may be authorized to enter the established ICDF operations area, provided they are conducting official business and have met all the ICDF facility-specific training requirements for the area (as listed on Table 6-1 of this HASP and as posted).

If RCAs are required, RadCon personnel, in accordance with the applicable company policies and procedures, will establish them.

The general configuration of the ICDF operations area is illustrated in Figure 1-4.

### **7.1 Radiological Control and Release of Materials**

If ICDF equipment or materials become potentially radiologically contaminated, they will not be released until required radiological surveys have been completed (e.g., hand-held instruments and swipes) in accordance with applicable company policies and procedures, as stated in the RWP, and as directed by RadCon personnel.

### **7.2 Site Security**

The ICDF is secured and controlled with the existing fence and through appropriate posting to prevent entry into ICDF operational areas.

**NOTE:** Signs are routinely lost because of high winds and will be replaced as soon as possible the next working day following discovery.

### **7.3 Wash Facilities and Designated Eating Areas**

ICDF operations, such as waste transportation, handling, storage, and disposal, will involve close, if not direct, contact with waste. Ingestion of hazardous substances is likely when workers do not practice good personal hygiene habits during and following activities in the operations areas of the ICDF. It is important to wash hands, face, and other exposed skin areas thoroughly after completion of work and before smoking, eating, drinking, or chewing gum or tobacco.

**NOTE:** No smoking, chewing, eating, applying lip balm, or drinking is allowed within posted areas of concern (areas containing waste) within the CERCLA-regulated area and within posted RCAs.

The designated eating areas for site personnel will be established in the ICDF operations.

### **7.4 Smoking Area**

Smoking will only be permitted outside the ICDF Complex CERCLA-regulated areas. Personnel will comply with all INEEL smoking policies, including disposal of smoking materials in the proper receptacles. All applicable company policy and procedure requirements related to smoking at the INEEL will be followed.

## 8. OCCUPATIONAL MEDICAL SURVEILLANCE

Task-site personnel will participate in the INEEL occupational medical surveillance program (or equivalent subcontractor program), as required by DOE Order 440.1, “Worker Protection Management for DOE Federal and Contractor Employees,” and 29 CFR 1910.120 or 1926.65. Medical surveillance examinations will be provided before assignment, annually, and after termination of HAZWOPER duties or employment. This includes:

- Personnel who are, or may be, exposed to hazardous substances at or above the OSHA permissible exposure limit (PEL), or published exposure limits, without regard to respirator use for 30 or more days per year
- All employees who are injured, become ill, or develop signs or symptoms because of possible overexposure involving hazardous substances or health hazards from an emergency response or hazardous waste operation
- All employees who wear a respirator for 30 days or more a year, or as required by “Respiratory Protection” (29 CFR 1910.134).

Personnel who wear a respirator in performance of their job, or who are required to take respirator training to perform their duties under this plan, must participate in the medical evaluation program for respirator use at least annually, as required by (MCP-2726 or PRD-2109), “Respiratory Protection.”

A single copy of the project HASP, job hazard analysis requirements, required PPE, confined space entry requirements (as applicable), and other exposure-related information will be made available, upon request, to the INEEL OMP physician (and subcontractor physicians) conducting medical surveillance for employees participating in this project. Exposure monitoring results and hazard information furnished to the OMP physician will be supplemented or updated annually (as stated in Section 12) as long as the employee is required to maintain a hazardous waste and material employee medical clearance. The OMP physician will then evaluate the physical ability of an employee to perform the work assigned.

A documented medical clearance (e.g., a physician’s written opinion) will be provided to the employee and line management stating whether the employee has any detected medical condition that would place him or her at increased risk of health impairment from working in hazardous waste operations, emergency response operations, respirator use areas, and confined space areas, as applicable. The physician may impose restrictions on the employee by limiting the amount and type of work performed.

Personnel are responsible for communicating any work or medical restrictions to their supervisor so modified work assignments can be made if necessary. During the MCP-3003 pre-job briefing, the supervisor conducting the briefing should ask workers if they have any work restrictions. However, it is the employees’ responsibility to inform the supervisor of any work or medical restrictions.

**NOTE:** Exposure levels in excess of permissible exposure limits and use of respiratory protection for more than 30 days per year are not anticipated for ICDF operations and maintenance activities.

**NOTE:** All managers, supervisor, and foreman have access to employees' current medical restrictions, certifications, and surveillances through the OMP database on the Safety and Health home page or OMP reports link: <http://webhome4/OMPReports/>. This allows management to review medical restrictions, surveillances, and certifications before assigning work tasks to employees.

## 8.1 ICDF Operations Subcontractor Workers

Subcontractor project personnel will participate in a subcontractor medical surveillance program that satisfies the applicable requirements of 29 CFR 1910.120 or 1926.65. This program must make medical examinations available before assignment, annually, and after termination of hazardous waste duties as stated above. The physician's written opinion, as defined by 29 CFR 1910.120(f)(7) (or equivalent), will serve as documentation that subcontractor personnel are fit for duty or will list work restrictions.

Medical data from the subcontractor employee's private physician, collected pursuant to hazardous material worker qualification, shall be made available to the INEEL OMP physicians, upon request. A subcontractor employee's past radiation exposure history may be requested and, if so, will be submitted to the BBWI radiation dosimetry and records section in accordance with applicable company policies, manuals, and procedures.

## 8.2 Injuries at the ICDF

It is the policy of the INEEL that an INEEL OMP physician examine all injured BBWI personnel for the following reasons:

- An employee is injured on the job
- An employee is experiencing signs and symptoms consistent with exposure to a hazardous material
- An employee is believed to have been exposed to toxic substances or physical or radiological agents in excess of allowable limits during the course of a project at the INEEL.

**NOTE:** In the event of an illness or injury, the decision to provide first aid and transport to the nearest medical facility, or whether to immediately request an ambulance and continue to stabilize and provide first aid, should be based on the nature of the injury or illness and the likelihood that transporting the individual may cause further injury or harm. Most likely, the person making this decision will only be trained to the medic first/CPR level and should contact the CFA medical facility at 777 or 526-1515 for further guidance if there is any question as to the extent of injury or potential to cause further harm by movement of the injured individual.

In the event of a known or suspected injury or illness caused by exposure to a hazardous substance or physical or radiological agent, the BBWI employee will be transported to the nearest INEEL medical facility for evaluation and treatment, as necessary. The field supervisor and FTL are responsible for obtaining as much of the following information as is available to accompany the individual to the medical facility:

- Name, job title, work location, and supervisor's name and phone number
- Substance, physical or radiological agent exposed to (known or suspected), and MSDS, if available
- Nature of the incident and injury or exposure and associated signs or symptoms of exposure
- First aid or other measures taken
- Locations, dates, and results of any relevant personal or area exposure monitoring or sampling

- List of PPE worn during this work (e.g., type of respirator and cartridge used).

Further medical evaluation will be determined by the treating or examining physician in accordance with the signs and symptoms observed, hazard involved, exposure level, and specific medical surveillance requirements established by the OMP director in compliance with 29 CFR 1910.120.

**NOTE:** In the event of an illness or injury, subcontractor employees will be taken to the closest INEEL medical facility (CFA-1612) (if doing so will not cause further injury or harm) or be transported by INEEL ambulance to have an injury stabilized before transport to the subcontractor's treating physician or off-Site medical facility.

The contractor facility manager will be contacted if any injury or illness occurs at the ICDF. As soon as possible after an injured employee has been transported to the INEEL medical facility, the field supervisor or designee will make notifications as indicated in Section 10.4.1, "Notifications."

RadCon personnel will evaluate all actual and/or suspected abnormal radiological exposures in excess of allowable limits and will establish the follow-up actions. For internal uptakes (as calculated committed effective dose equivalent values), an INEEL EDF, "Established Levels of Radionuclide Intake for Consideration of Medical Intervention," (LMITCO 1991) will be used as the basis for this evaluation and follow-up actions.

Before entry into a contamination control area, an OMP physician will examine all wounds (new or existing) to determine the nature and extent of the injury. The RadCon supervisor in conjunction with an OMP physician will determine whether the wound can be bandaged adequately for entry into a radiological contamination area in accordance with applicable company policies, manuals, and procedures.

### 8.3 Substance-Specific Medical Surveillance

ICDF operations will involve the transportation, handling, treatment, and disposal of 413,000 yd<sup>3</sup> (315,700 m<sup>3</sup>) of contaminated soil and debris with an additional 78 yd<sup>3</sup> (60 m<sup>3</sup>) of IDW estimated to be generated as part of the OU 3-14 tank farm investigation that will be disposed in the ICDF landfill. Several waste streams making up this total volume contain constituents (organic and inorganic) listed in 29 CFR 1910.1003, "13 Carcinogens (4-Nitrobiphenyl, etc.)," have a 29 CFR 1910 Subpart Z, "Toxic and Hazardous Substances," substance-specific standard, or contain radioisotopes. (The term "chemical" as used below is synonymous with the term "constituent.") Exposure to these chemicals is dependent upon several factors including but not limited to:

- Concentration of the chemical in the waste
- Physical form of the waste (e.g., soil, debris)
- Waste container type (e.g., sealed or open)
- Nature of the ICDF operation (e.g., transporting, handling, treating, disposal)
- Duration of exposure
- Controls in place to isolate operations personnel or mitigate exposure.

All ICDF operations will be evaluated to determine the hazards and potential exposures to operations personnel in accordance with applicable company policies and procedures. The IH and RadCon personnel will conduct exposure assessments for each operation to determine the potential for exceeding exposure limits.

For operations involving those ICDF waste-containing chemicals listed in 29 CFR 1910.1003, “13 Carcinogens (4-Nitrobiphenyl, etc.),” applicable company policies and procedures will be followed. For ICDF waste-containing chemicals with substance-specific standards (from 29 CFR, Subpart Z, “Toxic and Hazardous Substances”), substance-specific medical surveillance requirements will apply.

All exposures to ionizing radiation will be evaluated in accordance with applicable company policies, manuals, and procedures, and, where deemed appropriate, will be controlled through the use of an RWP.

If new waste streams with additional contaminants of concern are identified during the course of ICDF operations, then exposures will be evaluated and quantified to determine if a substance-specific standard applies. If regulatory mandated substance-specific standard action levels are triggered, then affected personnel will be enrolled in applicable substance-specific medical surveillance programs.

## **9. ICDF PERSONNEL ROLES AND RESPONSIBILITIES**

The organizational structure for ICDF operations reflects the resources and expertise required to operate the facility while minimizing risks to worker health and safety, the environment, and the general public. Job titles of the individuals in key roles at the ICDF facility are shown on the organizational chart in Figure 9-1. The OD and the ICDF Complex facility manager will interface with the subcontractor to determine the most appropriate use of available health, safety, and radiological resources.

Further, the emergency organization structure, with both responsibilities and authorities, is contained in the applicable contractor company policies and procedures. The sections below outline the responsibilities of key ICDF personnel.

### **9.1 ICDF Complex Personnel**

#### **9.1.1 ICDF Project Manager**

The ICDF project manager (PM) shall ensure that all activities conducted at the ICDF Complex comply with (1) company MCPs and PRDs; (2) all applicable OSHA, EPA, DOE, U.S. Department of Transportation (DOT), and State of Idaho requirements; and (3) “Implementation Project Management Plan for the Idaho National Engineering and Environmental Laboratory Remediation Program” (LMITCO 1998), the Quality Assurance Project Plan (QAPjP) (DOE-ID 2002), this HASP, and the applicable operations procedures.

The PM is responsible for the overall work scope, schedule, and budget and reporting to affected stakeholders such as DOE-ID and state/federal environmental regulatory agencies. The PM is responsible for (1) developing resource-loaded, time-phased control account plans based on the project technical requirements, budgets, and schedules, and (2) assigning project tasks. The PM coordinates all document preparation, field, laboratory, and modeling activities. The PM will implement the project requirements and ensure work is performed as planned for the project.

The PM will ensure that an employee job function evaluation is completed for all BBWI project employees, reviewed by the project IH for validation, and then submitted to the OMP for determination of whether a medical evaluation is necessary.

Other functions and responsibilities of the PM include:

- Developing the documentation required to support the ICDF operations
- Ensuring the technical review and acceptance of all project documentation
- Developing the site-specific plans required by the ER Program, such as operational procedures; work plans; environmental, safety, and health (ES&H) plans; and JSAs (as required)
- Ensuring that project activities and deliverables meet schedule and scope requirements, as described in the FFA/CO, Attachment A, “Action Plan for Implementation of the Federal Facility Agreement and Consent Order” (DOE-ID 1991), and applicable guidance
- Identifying the requirements for, scheduling for, and supporting the CERCLA and National Environmental Policy Act (NEPA) public review and comment process



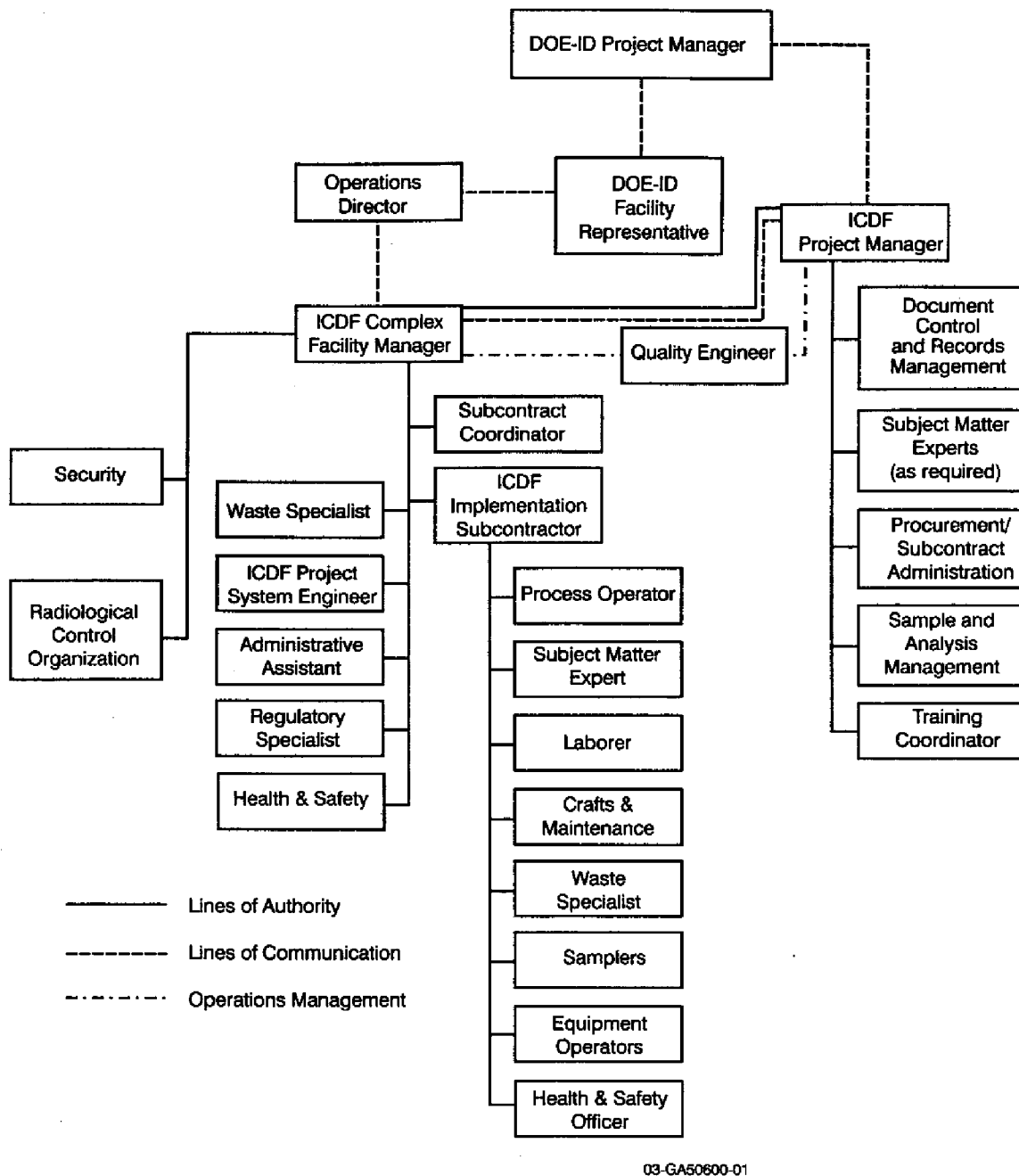


Figure 9-1. ICDF Complex organizational chart.

- Ensuring that the hazards checklists and JSAs are completed, as required by applicable company policies and procedures
- Identifying the subproject technology needs
- Coordinating and interfacing with the units within the program support organization on issues relating to QA, ES&H, and NEPA support for the project

- Coordinating the site-specific data collection, review for technical adequacy, and data input to an approved database, such as the Environmental Restoration Information System (ERIS)
- Coordinating and interfacing with the ICDF operations management to ensure milestones are met, adequate management support is in place, technical scope is planned and executed appropriately, and project costs are kept within budget.

The following personnel are direct reports to the ICDF project manager.

### **9.1.2 Document Control and Records Management**

The Idaho Completion Project (ICP) Administrative Record and Document Control (ARDC) office organizes and maintains data and reports generated by ICDF Complex operations. The ARDC office maintains a supply of all controlled documents and provides a documented system for the control and release of controlled documents, reports, and records.

### **9.1.3 Subject Matter Experts**

These positions are responsible for additional support, as required, during ICDF operations. Subject matter experts possess the necessary skills, training, and/or education to qualify them to aid in identifying and implementing solutions to problems. These personnel may be either INEEL employees or subcontractors hired for their particular expertise. Some examples of subject matter experts that will be employed are:

**9.1.3.1 Fire Protection Engineer.** The assigned fire protection engineer will support ICDF operations by providing reviews of work packages, conducts preoperational and operational fire hazard assessments (as required), and is responsible for providing technical guidance to facility personnel regarding all fire protection and life safety issues.

**9.1.3.1.1 Industrial Hygienist—**The assigned INEEL IH is the primary source for information regarding nonradiological, hazardous, and toxic agents associated with ICDF operations. The BBWI IH performs oversight of the subcontractor in performance of the following: (1) The IH assesses the potential for worker exposures to hazardous agents according to the subcontract and accepted industry IH practices and protocol. (2) By participating in task-site characterization, the IH (a) assesses and recommends appropriate hazard controls for the protection of task-site personnel, (b) operates and maintains airborne sampling and monitoring equipment, and (c) reviews for effectiveness, and recommends and assesses the use of PPE required in this HASP (recommending changes as appropriate).

**9.1.3.2 Safety Professional.** The assigned safety professional performs oversight of the subcontractor in performing the following functions: reviews work packages, observes site activity, assesses compliance with the applicable company manuals, signs SWPs, advises the field supervisor and HSO on required safety equipment, answers questions on safety issues and concerns, and recommends solutions to safety issues and concerns that arise at the task site. The safety professional may conduct periodic inspections, in accordance with applicable company policies and procedures and may have other duties at the task site as specified in other sections of this HASP, or in company PRDs or MCPs.

### **9.1.4 Procurement**

The procurement agent or representative is responsible for assisting the ICDF project team in procuring materials and services that will be required for the safe operations of the facility. The procurement agent will ensure materials and services are procured at a fair and reasonable price through

effective competition, are procured from qualified and reliable suppliers and vendors, and the procurement process is conducted with the highest professional and ethical standards.

#### **9.1.5 Sample Management Office**

The INEEL Sample and Analysis Management (SAM) will have the responsibility of obtaining necessary laboratory services, as required, ensuring that data generated from samples collected and analyzed meet the needs of the project, thereby validating all analytical laboratory data according to resident protocol.

The SAM ensures that laboratory data are produced in accordance with procedural and contractual requirements and monitors laboratory work to ensure complete, accurate, and timely performance and results. The SAM ensures analytical laboratory data are method-validated using SAM TPRs.

#### **9.1.6 Quality Engineer**

A quality engineer (QE) provides guidance for facility quality issues, when requested. The QE may periodically observe facility activities and verify that facility operations comply with quality requirements pertaining to these activities. The QE will determine the quality level and prepares inspection criteria for materials procured in support of the ICDF operations, as required.

The QE officer is responsible for the following:

- Verifying receipt of the waste profile documentation
- Approving that all waste, including treated waste, meets the ICDF WAC and providing an independent review of the waste inventory to the WAC
- Establishing waste inventory maintenance and control
- Ensuring all records generated, maintained, and processed within assigned areas of responsibility are handled in accordance with DOE, company, and site area records management procedures.

#### **9.1.7 ICDF Complex Facility Manager**

The ICDF Complex operations manager reports to the INTEC facility manager for overall aspects of the ICDF Complex operation and administration to ensure safe and efficient operation of the facility. The operations manager is also responsible for the following:

- Directing day-to-day operations of all aspects of the ICDF Complex, including the SSSTF, the ICDF disposal cells, the evaporation pond, and the leachate collection system.
- Reviewing and approving waste profile documentation, including drafts. The operations manager can accept or reject waste profiles and is responsible for resolving waste profile issues.
- Ensuring compliance with the ICDF Complex, ICDF disposal cells, SSSTF, and evaporation pond WAC.
- Providing notification of waste generation.
- Designating waste disposal locations.

- Identifying waste disposition pathways.
- Making ICDF Complex staff assignments and ensuring that ICDF Complex staff is competent, trained, and qualified for assigned work.
- Providing oversight for self-assessment and performance monitoring programs for ICDF Complex activities to provide for continuous improvement.
- Ensuring all records generated, maintained, and processed within the ICDF Complex are handled in accordance with DOE, company, and site area records management procedures.
- Interfacing with the ICDF project manager to effectively carry out the operational missions of the ICDF Complex.

The following personnel are direct reports to the ICDF Complex facility manager.

**9.1.7.1 Waste Specialist.** The waste specialist is responsible for the continuous review of waste profiles and waste tracking information to ensure compliance with the facility operational requirements and the WAC, and for oversight of the subcontractor in performing the following:

- Create an ICDF disposal cell waste schedule and provide the schedule to the ICDF Complex operations manager and the field supervisor
- Determination of waste verification sampling requirements and ensuring the completion of sampling
- Acceptance of waste into the ICDF Complex
- Receive and track the waste certificate form and shipping documentation.

**9.1.7.2 ICDF Facility Engineer.** Facility engineering support personnel report to ICDF operations manager and serve as the technical authority for ICDF operations. They provide engineering support to activities at the ICDF to ensure company-level conduct of engineering and configuration management programs are implemented, design services are provided to ICDF facilities, and an engineering design program is established and maintained. Engineering support personnel are also responsible for the following:

- Assist in the coordination of required Safety Analysis Reports (SARs), technical safety requirements (TSRs), hazard categorizations, and legacy operational safety documentation for ICDF facilities
- Ensure configuration management is managed through the unresolved safety question process
- Ensure the availability of trained and qualified engineering personnel to support ICDF operations
- Ensure engineering and safety analysis technical staff training programs are implemented for engineering personnel
- Ensure the criticality safety program as required for safety analysis is in place at the ICDF Complex

- Ensure all records generated, maintained, and processed within assigned areas of responsibility are handled in accordance with DOE, company, and site area records management procedures.

**9.1.7.3 Training Coordinator.** The training coordinator supports line management through training analysis, design, development, implementation, and evaluation to ensure all personnel within INTEC are properly trained and qualified to perform their assigned tasks. The training coordinator routinely communicates with line management to identify training needs and take corrective actions as necessary.

**9.1.7.4 Regulatory Specialist.** The regulatory specialist is responsible for providing guidance and technical support on environmental compliance, including oversight of environmental monitoring, inspections, and reporting at the ICDF. They will ensure the ICDF is compliant with applicable National Emission Standards for Hazardous Air Pollutants (NESHAP), IDAPA regulations and is operated within permit conditions and limitations.

**9.1.7.5 Radiological Engineer.** The radiological engineer (RE) is the primary source for information and guidance relative to the evaluation and control of radioactive hazards that may be encountered in the RCA. The RE provides engineering design criteria and review of contamination controls and makes recommendations to minimize health and safety risks to facility personnel as required and as deemed appropriate by the INTEC RadCon organization.

**9.1.7.6 Radiological Control Technician.** The assigned RCT is the primary source for information and guidance on radiological hazards that may be encountered during ICDF operations. Responsibilities of the RCT include:

- Radiological surveying of the facility, equipment, and samples (if collected)
- Providing guidance for radioactive decontamination of equipment and personnel (as required)
- Accompanying contaminated personnel to the nearest INEEL medical facility for evaluation if significant radionuclide contamination occurs.

The RCT must notify the RadCon Foreman and the field supervisor or HSO of any radiological occurrence that must be reported as directed by the applicable company manuals. The RCT may have other duties at the facility, as specified in other sections of this HASP, or in company PRDs and/or MCPs.

**9.1.7.7 Facility Operating Subcontractor.** Most activities performed within the ICDF complex will be performed by a subcontractor to BBWI. The following are general descriptions of some of the subcontractor roles. Specific descriptions of the subcontractor organization and associated roles and responsibilities will be delineated in a separate HASP or supplement to this HASP that is prepared by the subcontractor and submitted for approval by BBWI.

**9.1.7.7.1 Health and Safety Officer—**The HSO is the person assigned to the facility who serves as the primary contact for all health and safety issues. The HSO advises the field supervisor on all aspects of health and safety and is authorized to stop work at the facility if any operation threatens worker or public health and/or safety. In addition, the HSO is authorized to verify compliance with the HASP, to conduct conformance inspections and self-assessments, to require and monitor corrective actions, and to monitor decontamination procedures, as appropriate. The HSO is also responsible to:

- Maintain IH and RCT coverage

- Monitor the facility with regard to changing waste conditions
- Ensure compliance with the ASA and the HASP
- Establish and monitor training requirements.

Other ES&H professionals at the facility (including the safety professional [SP], IH, RadCon, RE, environmental representative, and facility representative) may support the HSO, as necessary.

Personnel assigned as the HSO, or alternate HSO, must be qualified (pursuant to the OSHA definition) to recognize and evaluate hazards and will be given the authority to take or direct actions to ensure that workers are protected.

**NOTE:** The HSO will ensure that the appropriate environment, safety, health, and quality assurance (ESH&QA) personnel participate in the development and review of the hazards profile screening checklist in accordance with applicable company policies and procedures and any subsequent JSA development.

**9.1.7.7.2 Industrial Hygienist**—The assigned IH is the primary source for information regarding nonradiological, hazardous, and toxic agents associated with ICDF operations. The IH assesses the potential for worker exposures to hazardous agents according to the subcontract and accepted industry IH practices and protocol. By participating in task-site characterization, the IH (1) assesses and recommends appropriate hazard controls for the protection of task-site personnel, (2) operates and maintains airborne sampling and monitoring equipment, and (3) reviews for effectiveness, and recommends and assesses the use of PPE required in this HASP (recommending changes as appropriate).

**9.1.7.7.3 Safety Professional**—The assigned safety professional reviews work packages, observes site activity, assesses compliance with the applicable company manuals, signs SWPs, advises the field supervisor and HSO on required safety equipment, answers questions on safety issues and concerns, and recommends solutions to safety issues and concerns that arise at the task site. The safety professional may conduct periodic inspections in accordance with applicable company policies and procedures, and may have other duties at the task site as specified in other sections of this HASP or the subcontract.

**9.1.7.7.4 Field Supervisor**—The field supervisor is responsible for managing the day-to-day operations of all aspects of the ICDF Complex, including the SSSTF, the ICDF disposal cells, the evaporation pond, and the leachate collection system, and for ensuring the safe and efficient operation of the facility. The field supervisor is also responsible for:

- Inspecting the facility and preparing appropriate inspection documentation
- Maintaining the assigned facility and being cognizant of work being conducted in the facility
- Routinely performing facility walk-throughs to assess material condition, equipment operability, and compliance with company and INTEC procedures and standards
- Ensuring all personnel who perform work in the facility have the necessary qualifications (competence commensurate with responsibilities), and ensuring all personnel maintain required training for job performance

- Ensuring compliance with all applicable INTEC and ICDF documentation.

If the field supervisor leaves the facility, an alternate will be appointed to act as the field supervisor. The identity of the acting field supervisor shall be communicated to facility personnel.

The following personnel are direct reports to the ICDF field supervisor.

**9.1.7.7.5 Field Crew**—The field crew shall understand and comply with the requirements of this HASP. All tasks to be conducted, associated hazards, hazard mitigation, emergency conditions, and emergency actions will be discussed. The HSO, IH, safety professional, and RadCon personnel will provide input to clarify facility health and safety requirements.

**9.1.7.7.6 Leachate Management and Waste Preparation Operators**—Operators will perform the day-to-day leachate management, waste preparation and facility inspection activities at the ICDF. Examples of these duties include but are not limited to: (1) checking and recording process instrumentation readings to ensure facility systems are operating within design parameters and specifications, (2) operating the truck loading/unloading facility at the evaporation pond, (3) operating the stabilization unit, (4) performing the required daily rounds and keeping the associated logs, (5) scheduling maintenance activities, (6) monitoring water levels at the evaporation pond, and (7) performing other operational duties specified by the ICDF field supervisor.

**9.1.7.7.7 Waste Specialist**—The waste specialist is responsible for the following:

- Creating an ICDF disposal cell waste schedule and provide the schedule to the ICDF Complex operations manager and the field supervisor
- Determining waste verification sampling requirements and ensuring the completion of sampling
- Accepting waste into the ICDF Complex
- Receiving and tracking the waste certificate form and shipping documentation.

**9.1.7.7.8 Laborer**—Personnel assigned the duty of laborer will perform operational support tasks required for the operation and maintenance of the ICDF Complex in accordance with existing labor/union agreements.

**9.1.7.7.8.1 Crafts and Maintenance Personnel**—Crafts and maintenance personnel will perform all maintenance functions on equipment, vehicles, and buildings within the ICDF Complex in a safe and efficient manner. Maintenance personnel will also:

- Ensure that all maintenance activities at INTEC are performed in accordance with company and INTEC procedures
- Interface with the scheduling group to ensure availability for scheduled work
- Ensure all records generated, maintained, and processed within assigned areas of responsibility are handled in accordance with DOE, company, and site area records management procedures.

**9.1.7.7.9 Lab Technicians**—The lab technician will perform field screening/analysis of waste streams within the limitation of the method or test being utilized. The lab technician may also collect, preserve, and package samples for laboratory analysis.

**9.1.7.7.10 Samplers**—Samplers will perform routine ICDF sampling tasks including the collection, preservation, and preparation for shipment of all samples. Examples of the types of ICDF samples to be collected include but are not limited to leachate, LDR system sampling, and groundwater samples. All sampling tasks will be conducted in accordance with the applicable operating procedure and/or associated JSA. The IH and RadCon personnel will support the samplers as warranted, based on facility-specific hazards and task evolutions.

**9.1.7.7.11 Visitors**—All visitors with official business at the ICDF (including BBWI personnel, representatives of DOE, and/or state or federal regulatory agencies) may not proceed beyond the ICDF fence without having the appropriate training as described below including but not limited to:

- Receiving facility-specific training for the area to be accessed
- Signing applicable work controls documents (e.g., RWP, a SWP, and a JSA for the area to be accessed)
- Wearing the appropriate PPE.

A fully trained facility representative (such as the field supervisor or HSO) will escort visitors entering the ICDF.

<p><b>NOTE:</b> Visitors may not be allowed into the ICDF operational disposal cells area during heavy equipment operation or other areas as identified by the ICDF HSO to minimize safety and health hazards. The field supervisor and HSO, in consultation with RadCon personnel, will make the determination as to any visitor's demonstrated "need" for access into the ICDF.</p>
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**Visitors with no official business at the ICDF will not be permitted onsite.**



## 10. EMERGENCY RESPONSE PLAN

This emergency response plan defines the roles and responsibilities of ICDF personnel during an emergency. Such an emergency could be at the ICDF or INTEC, or a Sitewide emergency. This section provides details of the INEEL Emergency Response Organization (ERO) and applicable company policy and procedure information. Plan (PLN) -114, "INEEL Emergency Plan RCRA Contingency Plan," describes the overall process developed to respond to and mitigate consequences of emergencies that might arise at the INEEL. This section defines the responsibilities of operations personnel and the INEEL ERO by providing guidance for responding to abnormal events during operational activities at the ICDF Complex.

Applicable company policies and procedures may be activated in response to events occurring at the INTEC or at the ICDF Complex or at the discretion of the emergency action manager (EAM). Once the INEEL plan is activated, ICDF operations personnel will follow the direction and guidance communicated by the EAM.

**NOTE:** The OSHA HAZWOPER definition of an emergency is not defined the same as classified by DOE Orders 151.1A, "Comprehensive Emergency Management System," and 232.1, "Occurrence Reporting and Processing of Operations Information." For this reason, the term "event" will be used in this section when referring to project HAZWOPER emergencies.

### 10.1 Pre-Emergency Planning

The applicable company policies and procedures provide the basis for preplanning all INEEL emergency events. This base plan is supplemented with INEEL facility-specific addendums. This preplanning makes it possible for the project to anticipate and appropriately respond to abnormal events that can affect project activity. Preplanning also ensures that this ICDF emergency response plan is integrated with the INEEL and INTEC emergency response programs. Specific procedures for addressing emergency events and actions to be taken are further described in the facility-specific emergency implementing procedures. Finally, this HASP addresses project-specific hazards, potential emergency events, and the actions to take following such events. Emergency response program planning elements that must be completed prior to the operation of the ICDF include the following:

- Establishing emergency warning signals and evacuation routes
- Implementing personnel accountability procedures
- Identifying emergency medical services and the personnel charged with performing those services
- Establishing effective site communications
- Establishing requirements for emergency equipment and supplies
- Establishing the preferred means for notifying the INEEL ERO of abnormal events.

**NOTE:** Although the ICDF is outside the INTEC fence, all emergencies will be reported through the INTEC shift technical lead (STL) to the ERO for classification in accordance with applicable company policies and procedures. If the INTEC ERO is activated, site emergency response will follow applicable company policies and procedures.

## **10.2 Emergency Preparation and Recognition**

The sections for hazards identification and mitigation and accident prevention provide the strategy that will be followed at the project site to prevent accidents. Similarly, emergency preparation and recognition also will require project personnel to be constantly alert for potentially hazardous situations and signs and symptoms of chemical exposure or releases. All ICDF personnel should be familiar with the techniques for hazard recognition and the assigned action levels and associated actions to be taken as identified in Section 3.

Preparation and training on emergencies will include proper ICDF access and egress procedures in response to ICDF events and INEEL emergencies as part of the project-specific HASP training and ICDF access training where applicable. Visitors also will receive this training on a graded approach based on their ICDF access requirements. Visitor training will include alarm identification, location and use of communication equipment, location of site emergency equipment, and evacuation. Emergency phone numbers and evacuation route maps will be located in ICDF operational areas.

On-scene response to and mitigation of site emergencies could require the expertise of both INTEC Incident Response Team (IRT) personnel and INEEL fire department personnel. Emergencies that could occur include:

- Accidents resulting in injury
- Fires
- Spills of hazardous/radiological materials
- Tornadoes, earthquakes, and other adverse natural phenomena
- Vehicle or transportation emergencies
- Safeguard and security emergencies
- Events requiring emergency notifications
- Emergencies at nearby facilities that could prompt evacuation or take-cover actions at the task site.

## **10.3 Emergency Facilities and Equipment**

Emergency response equipment, including the items described in Table 10-1, will be maintained at the ICDF. The applicable company policies and procedures list emergency equipment available at INTEC. This includes the Emergency Control Center (ECC) located in Building CPP-652, equipment located in INTEC, and the IRT vehicle. Additional heavy construction and other equipment listed in applicable company policies and procedures is available for use during emergencies.

The INEEL fire department maintains an emergency hazardous material response van that can be used to respond to an event or emergency at the ICDF. Fire department personnel are also trained to provide immediate hazardous material spills and medical services. In addition, the CFA-1612 medical facility is manned by medical personnel who can evaluate and stabilize injured personnel or personnel experiencing signs and symptoms of exposure. At least two persons with current medic/first-aid training will be present at the ICDF during operations.

Table 10-1. Emergency response equipment to be maintained at the project site during operations.

Equipment Name and Quantity Required	Location at ICDF	Responsible Person	Frequency of Inspection
Fire extinguishers <sup>a</sup>	Located throughout the decontamination facility, administration building, disposal cells, evaporation pond, and on each piece of heavy equipment	Operations manager	Monthly
First aid supplies	Vehicles and construction trailer	Operations manager	Inspect weekly and sign tag with annual inspection
Eye wash station	At decontamination facility/treatment facility	Operations manager	Monthly, or the frequency determined by the manufacturer
Eye wash bottle <sup>b</sup>	At disposal cells and evaporation ponds	Operations manager	Monthly, or replace after use
Hazardous materials spill kit	At decontamination facility	Operations manager	Monthly
Communication equipment available	Onsite	Operations manager	Availability and daily functional check

a. 10A/60BC extinguishers or as specified by the INTEC fire protection engineer.

b. An eyewash bottle will be used to provide an immediate eye flush if required. Portable eyewash stations are available at evaporation ponds and disposal cells. Employees are instructed to use the bottles and immediately proceed to the decon/treatment facility permanent eyewash station. An eyewash station is available within the INTEC operations area that meets the ANSI Z 358.1-1998 requirements. Eyewash stations are located within 100 ft or 10 seconds from exposure point in the decon facility/treatment facility.

## 10.4 Emergency Communications

In the event of an emergency, the capability to summon INEEL emergency response resources, to immediately notify facility personnel, and to inform others of site emergencies is required. Communications equipment at the task site will be a combination of radios, telephones (mobile, cellular, or facility), and pagers. The INTEC STL will be notified of any ICDF emergency event and the STL will then make the required INTEC and INEEL ERO notifications.

### 10.4.1 Notifications

During emergency situations, the INTEC STL will be notified of any project emergency event. The INTEC STL will then make the required ERO and Warning Communications Center (WCC) notifications. The following information should be communicated, as available, to the INTEC STL:

- The caller's name, title (e.g., field supervisor or HSO), telephone number, and pager number
- Exact location of the emergency
- Nature of the emergency including time of occurrence, current site conditions, and special hazards in the area
- Injuries, if any, including numbers of injured, types of injuries, and conditions of injured

- Emergency response resources required (e.g., fire, hazardous material, and ambulance)
- Additional information as requested.

**NOTE:** If the INTEC STL cannot be contacted, the WCC will be notified of the event and the information listed below communicated. The WCC also must be told that notification to the INTEC STL and EAM has not been made.

## **10.5 Personnel Roles, Lines of Authority, and Training**

### **10.5.1 The Idaho National Engineering and Environmental Laboratory Emergency Response Organization**

The INEEL ERO structures are based on the incident command system and are described in applicable company policies and procedures and facility-specific addendums to that plan.

### **10.5.2 Role of Project Personnel in Emergencies**

Depending on the event, a graded response and subsequent notifications will take place. The FTL and project personnel responsibilities are described below. Personnel will respond to emergencies only within the limits of their training and designated by their position. All personnel are trained to the facility-specific emergency actions as part of the access training or will be escorted by someone who has been trained. Emergency response actions also will be covered as part of the HASP briefing as stated in Table 6-1.

**10.5.2.1 ICDF Complex Operations Manager.** The ICDF Complex operations manager, or designated alternate, is responsible for initiating all requests for emergency services (e.g., fire, medical) and for notifying the INTEC STL of abnormal or potential abnormal events occurring at the ICDF. In addition, the operations manager or designated alternate will serve as the facility area warden. This individual is responsible for conducting personnel accountability at the facility. This will be accomplished by completing positive sweeps of all facility areas to ensure all personnel are aware of the emergency event. All personnel will be directed to the designated assembly point where the attendance log will be used to determine what personnel are onsite (role call). The operations manager will then report accountability status to the INTEC STL/EAM

Additionally, the operations manager will control the scene until a member of the Incident Command System authority arrives at the scene to take control as the on-scene commander (OSC). When communicating emergency information to the OSC, the operations manager or designated alternate will provide all requested information regarding the nature of the event, potential hazards, and other information requested.

**10.5.2.2 ICDF Personnel.** Every person at the ICDF has a role to play during an event or INEEL emergency. Each employee must be constantly aware of potential problems or unexpected hazardous situations and immediately report these situations to the operations manager or designated alternate. All employees are expected to watch out for their fellow workers, to report their concerns to the operations manager, and to respond to emergency events, as provided for in this HASP. Specific facility personnel responsibilities are outlined in Table 10-2.

Table 10-2. Responsibilities during an emergency.

Responsible Person	Action Assigned
Any ICDF worker	Signal evacuation or take cover
Any fire-extinguisher-trained worker	Extinguish fires (incipient fires only) or contain spills (within level of training)
Any medic first-aid/CPR-trained personnel	Provide first aid within level of training (on a voluntary basis)
Operations manager or designee	Contact the INTEC shift technical lead or EAM (if ECC has formed)
Operations manager or designee	Contact the INEEL site emergency telephone number or the WCC (if INTEC shift technical lead cannot be contacted)
Operations manager or trained designee	Conduct personnel accountability and report information to the INTEC shift technical lead or ECC
Operations manager or designee	Report incipient fires to the INEEL fire department Report spills to the INEEL spill notification team
HSO	Report occupational injuries/illnesses to the OMP.

**10.5.2.3 Personnel Accountability and Area Warden.** Facility personnel are required to evacuate the ICDF or INTEC in response to TAKE COVER, EVACUATION, and local evacuation alarms. In each case, the operations manager, or designated alternate, shall account for the people present on the facility at the time the alarm was initiated. The operations manager or trained alternate serves as the area warden for the ICDF and completes the personnel accountability (following positive sweeps of the facility). The results of this accountability will then be communicated to the operations manager for reporting to the INTEC STL or EAM (if the ECC has been formed).

**10.5.2.4 Spills.** If the material spilled is known and is small enough to be safely contained, ICDF personnel will handle spill control within their level of training (described below) using spill supplies in the ICDF operational area. ICDF personnel will immediately report the incident to the field supervisor, RadCon, and the HSO. The ICDF facility manager, and if applicable the CFA EAM, in accordance with applicable company policies and procedures, will determine reporting requirements. If any release of a hazardous material occurs, task site personnel will comply with the following immediate spill response actions.

**10.5.2.4.1 Untrained Initial Responder—**The requirements for the untrained initial responder (or if the material characteristics are unknown) are listed below:

- Place equipment in a safe configuration
- **Evacuate** and **isolate** the immediate area
- Notify and then **seek help** from and **warn** others in the area
- Notify the field supervisor.

**10.5.2.5 Trained Responder.** The requirements for the trained responder where material characteristics are known and no additional PPE is required are listed below:

- Place all equipment in a secure configuration
- **Seek help** from and **warn** others in the area
- **Stop** the spill if it can be done without risk (e.g., returning the container to the upright position, closing valve, and shutting off power)
- **Provide** pertinent information to the field supervisor
- **Secure** any release paths if safe to do so.

## 10.6 Emergency Alerting, Responses, and Sheltering

### 10.6.1 Alarms

Alarms and signals are used at the ICDF and the INEEL to notify personnel of abnormal conditions requiring a specific response. These include radiation-monitoring alarms denoted by fast ringing bells and fire alarms, which vary from building to building within the INTEC area. Responses to these alarms are addressed in the general employee training. In addition to the alarms previously described, emergency sirens located throughout INTEC serve as the primary means for signaling emergency TAKE COVER or EVACUATION protective actions.

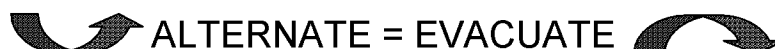
**10.6.1.1 Take Cover—Continuous Siren.** Radiation or hazardous material releases, adverse weather conditions, or other event or emergency conditions may require that all personnel take cover indoors in the nearest building. A TAKE COVER protective action may be initiated as part of a broader response to an emergency situation and may precede an evacuation order. The order to TAKE COVER is usually announced by activating the emergency siren. The signal to take cover is a CONTINUOUS SIREN. The order to TAKE COVER is usually announced by activating the INTEC emergency siren.



However, the order to take cover also can be given by word of mouth, radio, or voice paging system. When ordered to TAKE COVER, ICDF operations personnel will place ICDF operations and equipment in a safe configuration (as appropriate) and then seek shelter in ICDF buildings or vehicles (if outside the facility). Eating, drinking, and smoking are not permitted during take-cover conditions.

RadCon personnel will assist and direct all workers exiting from radiological contamination areas during a TAKE COVER alarm.

**10.6.1.2 Total Area Evacuation—Alternating Siren.** A total area evacuation is the complete withdrawal of personnel from the entire ICDF and INTEC area. The evacuation signal is an ALTERNATING SIREN.



When ordered to EVACUATE, project personnel will place ICDF operations and equipment in a safe configuration (as appropriate) and then proceed along the specified evacuation route to the designated assembly area or as directed by the emergency coordinator. For total area evacuations, the

facility command post is activated and all personnel will gather at the primary facility evacuation assembly area or the location designated by the EAM or field supervisor (if outside the ICDF). The field supervisor or trained alternate will then complete the personnel accountability and report the result of the accountability process to the facility EAM.

RadCon, IH, and HSO personnel will assist and direct all workers exiting from radionuclide-contamination areas during an EVACUATION alarm. Eating, drinking, and smoking are not permitted during emergency evacuations.

**NOTE:** For total area evacuations, the INTEC ECC is activated and all personnel gather at the primary INTEC evacuation assembly area or the location designated by the EAM. The operations manager or trained alternate will then complete the personnel accountability using the attendance log. In this situation, the facility area warden reports the result of the accountability process to the INTEC EAM.

**10.6.1.3 Local Area Evacuation.** A local area evacuation is the complete withdrawal of personnel from the ICDF, but it does not require the complete evacuation of the entire INTEC area. The facility alarm system will serve as the primary emergency evacuation signal. However, the order to evacuate can also be given by word of mouth, radio, or voice paging system. When ordered to evacuate the facility, personnel shall place the ICDF in a safe condition (as appropriate) and then proceed along the specified evacuation route to the assembly area designated for local area evacuations, or as directed by the operations manager or designee. (Emergency evacuation routes for each ICDF building will be developed and posted following construction.) Eating, drinking, and smoking are not permitted during emergency evacuations.

Facility RadCon personnel will assist and direct all workers exiting from radiological contamination areas during an evacuation alarm.

## **10.7 Evacuation Assembly Areas and Central Facilities Area Medical Facility**

The ICDF and INTEC maintain primary and secondary evacuation routes and assembly areas. These routes may be used in response to a total facility evacuation as directed by the INTEC EAM. Copies of the following figures will be available in the ICDF operations area. These figures are:

- Figure 10-1, ICDF evacuation routes and assembly area
- Figure 10-2, INTEC evacuation routes and assembly areas
- Figure 10-3, Map showing the route to the nearest medical facility (CFA-1612).

In the event that the ICDF is evacuated, personnel shall assemble in the designated assembly area, or as directed by the operations manager. If a total area evacuation of INTEC is ordered, then ICDF personnel shall relocate to the INTEC primary evacuation assembly area, or as directed by the EAM.

## **10.8 Medical Emergencies and Decontamination**

Medical emergencies and responses to injuries or suspected exposures will be handled as stated in Section 8.2. Decontamination of personnel and equipment is described in Section 11.2.

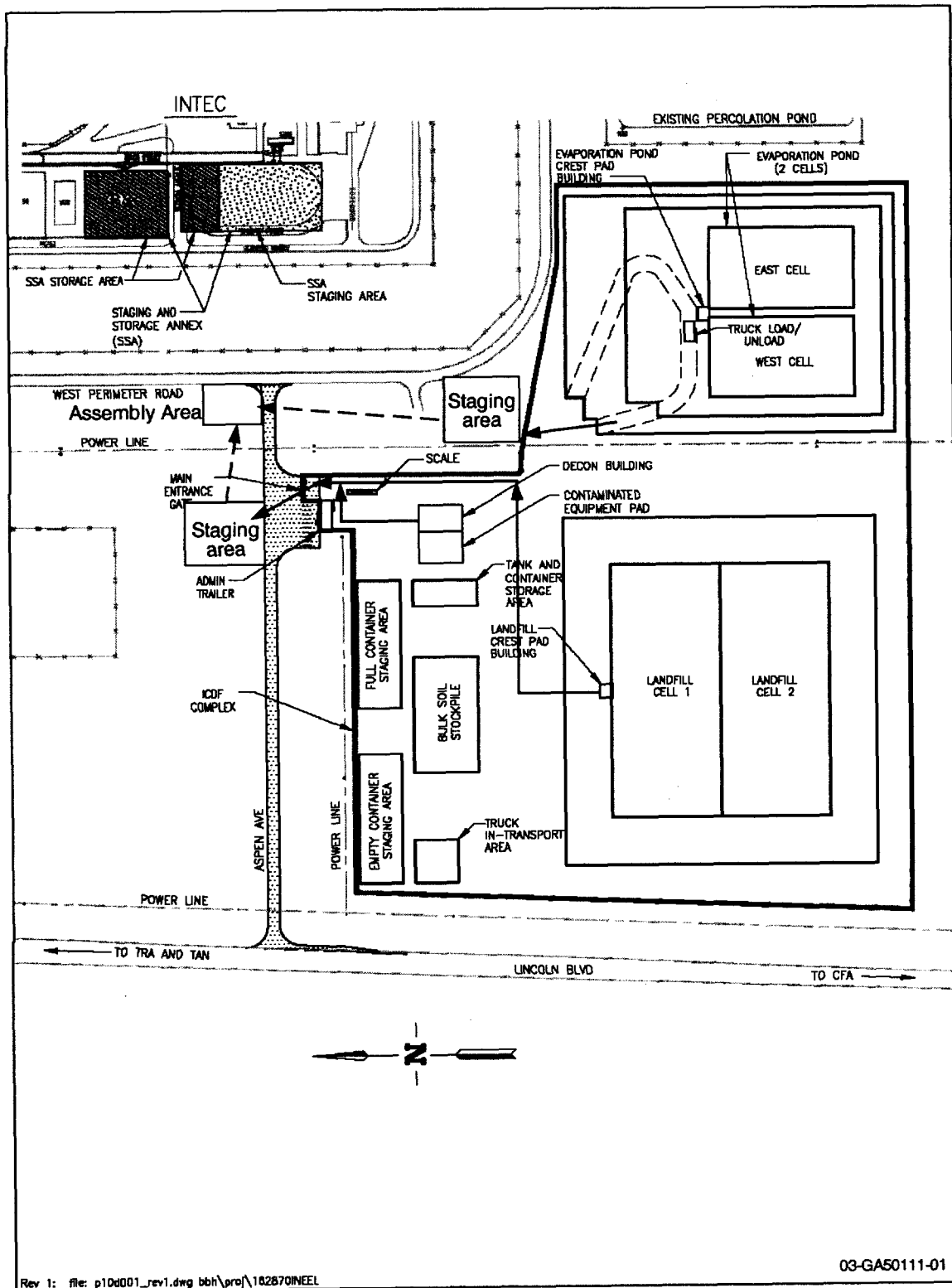


Figure 10-1. ICDF evacuation routes and assembly area.



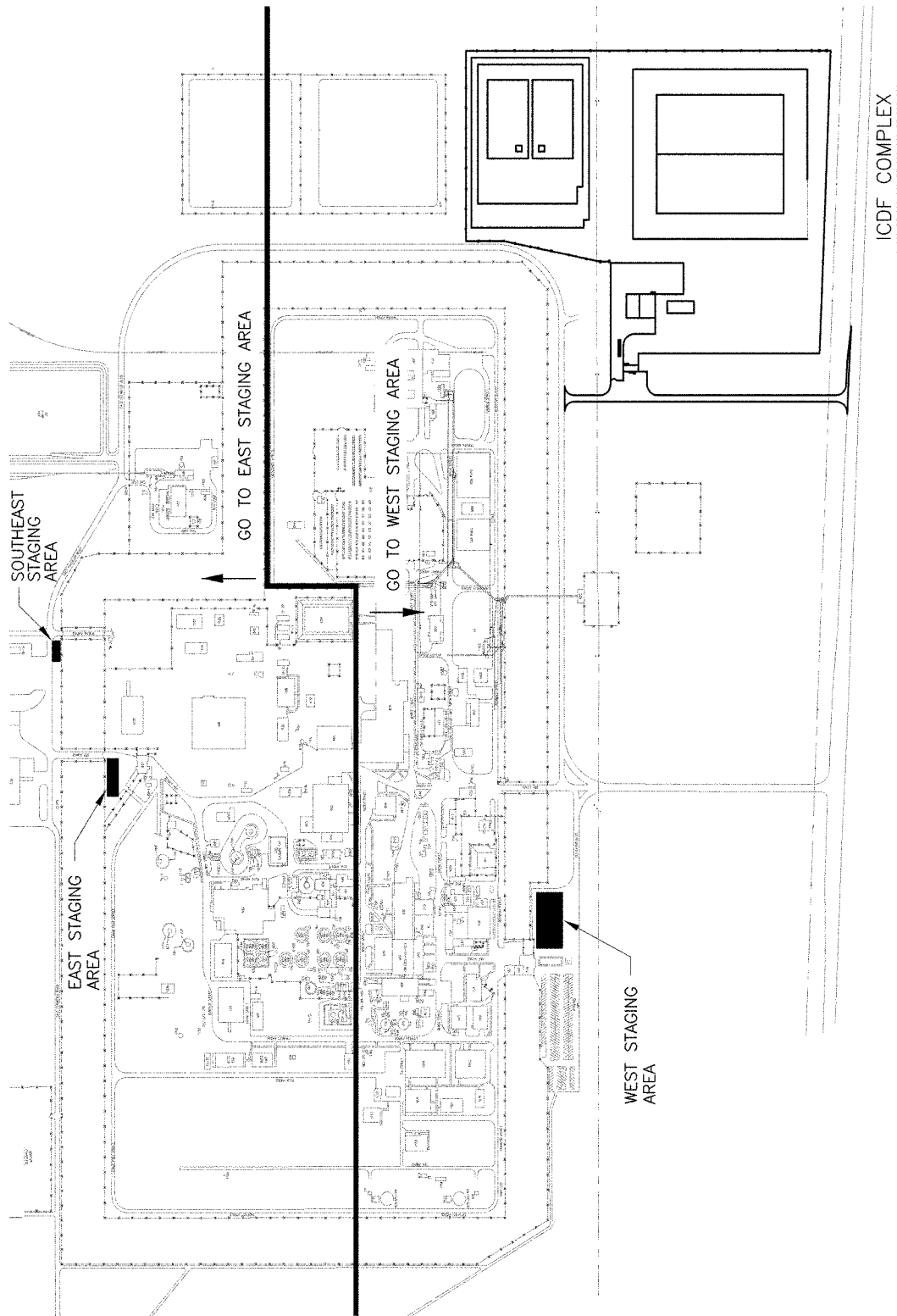
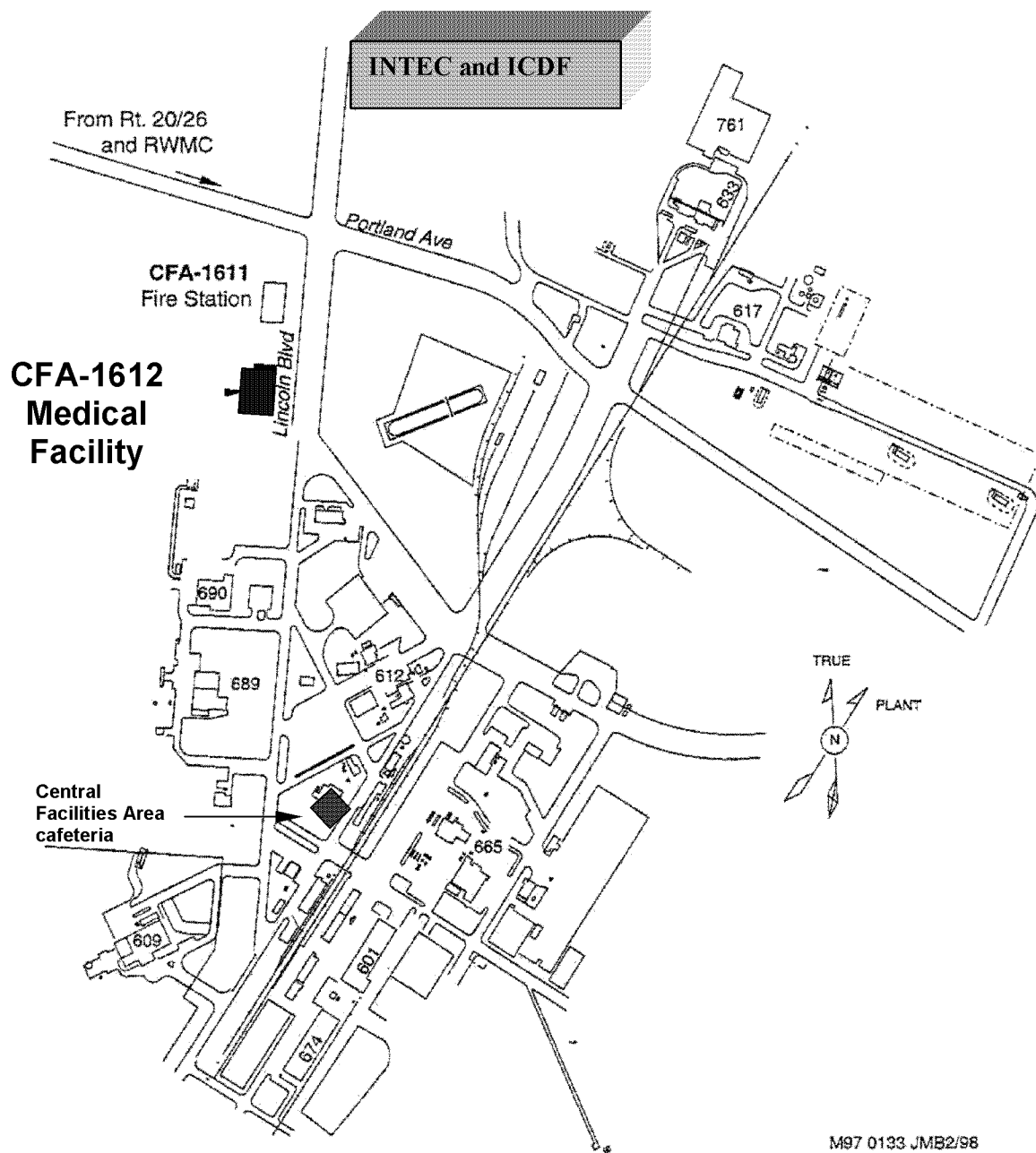


Figure 10-2. INTEC evacuation routes and assembly areas.



(Not to Scale)

Figure 10-3. Map showing the route to the nearest medical facility (CFA-1612).

## **10.9 Reentry, Recovery, and Site Control**

All reentry and recovery activities will follow general site security and control requirements identified in Section 7 unless conducted as part of an emergency response action. All entries to the project site performed in support of emergency actions will be controlled by the OSC.

### **10.9.1 Reentry**

During an emergency response it is sometimes necessary to reenter the scene of the event. Reasons for performing a reentry may include:

- Performing personnel search and rescues
- Responding to medical first-aid needs
- Performing safe shutdown actions
- Performing mitigating actions
- Evaluating and preparing damage reports
- Performing radiation or hazardous material surveys.

Reentries will be carefully planned to ensure that personnel are protected from harm and to prevent initiating another emergency event. Reentry planning is undertaken as a graded approach depending on the nature of the initiating event.

### **10.9.2 Recovery**

After the initial corrective actions have been taken and effective control established, response efforts will shift toward recovery. Recovery is the process of assessing post-event and post-emergency conditions and developing a plan for returning to pre-event and pre-emergency conditions, when possible, and following the plan to completion. The EAM is responsible for determining when an emergency situation is sufficiently stable to terminate the emergency and enter the recovery phase. The project manager, with concurrence from the operations manager in consultation with the SAD, will appoint the recovery manager.

## **10.10 Critique of Response and Follow-up**

A review and critique will be conducted following all emergency events, drills, and exercises at the INEEL. In some cases, an investigation may be required before commencing recovery actions. For this reason, care should be exercised to preserve evidence when appropriate.

## **10.11 Telephone and Radio Contact Reference List**

Table 10-3 lists the points of contact for the project. A copy of this list will be posted in the facility at all times. Because personnel listed may change frequently, working copies of this list will be generated as required to note new positions and changes of personnel assigned. This HASP should not be revised with a document action request to note these changes.

Table 10-3. ICDF emergency contact list.

Contact Title	Contact Name	Phone Number/ Radio Net	Pager Number
Warning Communications Center, medical, fire, security	N/A	777, 6-1515	N/A
INTEC Shift Technical Lead	N/A	6-3100	2096
ICDF Facility Manager	S. M. Edgett	6-3820/ 520-3118	6644
CFA Site Area Director	S. L. Winn	6-1075/ 520-6013	5494
First Aid (CFA Medical Dispensary, CFA-1612)	N/A	6-2356	N/A
Occupational Medical Program	N/A	6-1596	N/A
ICDF Complex Project Manager	D. Jorgensen	6-7022/ 520-4160	N/A
ICDF Project Engineer/ System Engineer	P. Gibson	6-1379	N/A
BIC Project Director	M. Graham	6-2945	1000
ICDF Radiological Control Engineer	J. Horton	6-2315	5209
ICDF RadCon Foreman	W. R. Spruill	6-0244	5008
BIC RadCon Manager	A. Nellesen	6-6638/ 520-1226	5293
Industrial Hygiene	L. Gurney	6-3600	3531
Industrial Safety	L. Gurney	6-3600	3531
Health and Safety Officer	Subcontractor		
BIC ESH&QA Manager	M. Langlois	6-2160/ 520-1297	9042
<u>INTEC DOE-ID Facility Representative</u>	J. A. Herritt	6-4981	6705
N/A = not applicable			
BIC = Balance of INEEL Completion			

## **11. DECONTAMINATION PROCEDURES**

ICDF operations may involve some decontamination of waste containers and associated vehicles depending on the configuration of the container (sealed or open). Every effort will be made to prevent contamination of ICDF personnel and equipment through the use of engineering controls, isolation of source materials, contaminant monitoring, personnel contamination control training, and by following material handling requirements and procedures for contaminated or potentially contaminated materials. If contact with potentially contaminated surfaces is anticipated, then additional engineering controls, in combination with PPE upgrades, may be necessary to control the contact hazard. However, if chemical or radiological contamination is encountered at levels requiring decontamination, this section provides guidance on how it will be performed.

Engineering controls, in conjunction with contamination prevention and control practices and proper protective clothing donning and doffing procedures, will serve as the primary means to eliminate the need for personnel decontamination. Where decontamination of waste containers is required, technical procedures will be used. Applicable company policies and procedures contain information on personnel radionuclide decontamination. Radionuclide decontamination operations required for equipment or areas will be performed in accordance with applicable company manuals and at the direction of RadCon personnel.

### **11.1 Contamination Control and Prevention**

Contamination control and prevention procedures will be implemented to minimize ICDF personnel contact with contaminated surfaces if such surfaces are encountered or may be contacted during ICDF operations. The use of engineering controls, protective barriers, protective clothing, modified work control practices, or addition of hold points and surveys will all be used to minimize direct contact with contaminated surfaces. The following contamination control and prevention measures will be employed if contamination is encountered or anticipated:

- Identify potential sources of contamination and design containment, isolation, and engineering controls to eliminate or mitigate any potential for contact or release of contaminants
- Limit the number of personnel, equipment, and materials that enter the contaminated area
- Implement immediate decontamination procedures to prevent the spread of contamination (if contamination is found on the outer surfaces of equipment)
- Use only the established control entry and exit point from the contaminated area to minimize the potential for cross-contamination and expedite contamination control surveys
- Wear disposable outer garments and use disposable equipment (where possible)
- Use hold points defined in procedures and work orders to monitor for contamination where anticipated.

### **11.2 Equipment and Personnel Decontamination**

ICDF decontamination procedures will be developed on a case basis for decontamination of waste containers and associated vehicles in order to prevent the spread of contamination and to meet additional ICDF operational requirements. In addition, equipment decontamination is necessary to control contamination and protect personnel at other areas within the ICDF Complex. Both radiological and nonradiological contamination will be evaluated when decontaminating surfaces.

Radionuclide decontamination operations for equipment or areas will be performed in accordance with applicable company manuals and at the direction of RadCon personnel. Nonradionuclide decontamination will be conducted in accordance with established on a case-by-case basis under the direction of IH personnel to determine the most appropriate PPE. In all cases, the collection, storage, and disposal of decontamination waste will be addressed prior to the generation of such waste in accordance with the waste management plan. Protective clothing and respiratory protection selected for decontamination tasks will be based on the contaminant being decontaminated and established JSA and work control requirements.

### **11.2.1 Equipment Decontamination**

Sealed waste containers and other isolation controls have be established, where feasible, to prevent contamination of ICDF equipment and facilities from known or suspected sources of contamination. These controls will serve to isolate and eliminate or mitigate many of the potential contamination pathways to prevent equipment contamination and greatly reduce the need for decontamination.

When required, equipment decontamination will be conducted in accordance with established ICDF decontamination procedures. Low-cost consumable items will be discarded if initial decontamination efforts fail or extensive decontamination is required that is not in accordance with ALARA principles.

### **11.2.2 Personnel Decontamination**

Engineering controls, in conjunction with facility contamination prevention and control practices and proper protective clothing donning and doffing procedures, will serve as the primary means to eliminate the need for personnel decontamination. The PPE selection, as identified in the RWP and JSA, will provide for the layered barriers required to prevent permeation and minimize external surface contamination.

If radiological contamination areas are established, procedures for donning and doffing protective clothing will be posted at the entrance and exit. Prior to donning PPE, all items will be inspected following the list in Table 5-3 in Section 5 of this HASP. The greatest potential for personnel contamination exists from improper doffing of contaminated protective equipment when exiting a contamination area.

### **11.2.3 Decontamination in Medical Emergencies**

If a person is injured or becomes ill, he should immediately be evaluated by first-aid-trained personnel (within their level of training and on a voluntary basis) at the ICDF. If the injury or illness is serious, then the field supervisor will contact the INTEC shift technical lead or the WCC (if the shift technical lead cannot be reached) to summon emergency services.

Medical care for serious injury or illness will not be delayed for decontamination. In such cases, gross decontamination may be conducted by removing the injured person's outer protective clothing (if possible) and other contaminated areas with an item such as a bag or a glove. If contaminated PPE cannot be removed without causing further injury (except for the respirator, which must be removed), potentially contaminated areas of the individual will be wrapped in plastic, blankets, or available material to help prevent contaminating the inside of the ambulance, medical equipment, and medical personnel.

The IH and/or RCT (depending on the type of contamination) shall accompany the employee to the medical facility to provide information and decontamination assistance to medical personnel.

Contaminated PPE will then be removed at the CFA medical facility (CFA-1612) and carefully handled to prevent the spread of contamination. Applicable company policies and procedures contain information on proper handling of radionuclide-contaminated wounds.

## **11.3 Doffing Personal Protective Equipment and Decontamination**

Decontamination of PPE clothing prior to doffing is generally not performed at the ICDF Complex because the concentrations of the hazardous constituents are low enough that utilization of the INEEL radiological doffing procedures is adequate to control the spread of contamination. Removal of contaminated protective clothing using standard radiological doffing techniques (rolling outer surfaces inward and from top to bottom while being removed) provides the most effective method for containing and isolating the contaminants and greatly reduces the potential for exposure to other personnel who would be put at risk of cross-contamination from other decontamination methods (e.g., washing and brushing).

If the protective clothing also is worn as an anti-C layer, then tape, gloves, booties, and any required dosimetry will be removed following the posted sequence. All PPE will be placed in the appropriately labeled waste-disposal containers. Doffing and any required decontamination will take place at the designated work area boundary or in a contamination RBA or step-off pad (if an RBA is established). If exiting an RCA, personnel will conduct the proper personal survey, as stated in the RWP (if written).

A general approach for doffing modified Level D, Level C, or modified Level C PPE is described below. However, there is no single doffing strategy that works for all circumstances. Modifications to this approach are appropriate if facility conditions change or at the discretion of the HSO in consultation with the IH and RadCon personnel. Both radiological and nonradiological hazards will be evaluated, as applicable.

### **11.3.1 Modified Level D Personal Protective Equipment Doffing and Decontamination**

Modified Level D protective clothing (e.g., Tyvek coveralls, booties) will be doffed following standard radiological removal techniques (as posted) and will constitute the initial decontamination step. If the protective clothing is also being worn as an anti-C layer, then tape, gloves, booties, and any required dosimetry will be removed following the posted doffing sequence. All PPE will be placed in the appropriately labeled waste container(s) disposal. Doffing and any required decontamination will take place at the contamination RBA/step-off pad boundary (if a radiological contamination area is established). Doffing will be followed by a personal contamination survey, as stated in the RWP.

### **11.3.2 Level C Personal Protective Equipment Doffing and Decontamination**

If respiratory protection is worn in conjunction with protective clothing (e.g., Level C PPE), the modified Level D sequence will be followed with one additional step. Following protective-clothing doffing, respirators will be removed and placed in a separate container. Doffing and any required decontamination will take place at the designated work area boundary or in a radiological contamination buffer area, or step-off pad if a radiological-contamination area is established. If exiting a radiological contamination area, personnel will conduct the proper personal survey, as stated in the RWP (if one is required).

## **11.4 Personnel Radiological Contamination Monitoring**

Personnel contamination monitoring (with hand-held detectors and automated whole-body counters) may be required before exiting ICDF operational areas, as determined appropriate by RadCon personnel or as stated in the RWP and on postings for the respective radiological control area.

## **11.5 Storage and Disposal of Operational Waste Materials**

Waste generated from decontamination and other ICDF operational activities will be properly characterized, stored, and disposed of in accordance with applicable company manuals, established ICDF procedures, and applicable company forms.

## **11.6 ICDF Sanitation and Waste Minimization**

ICDF personnel will use washroom and restroom facilities located at the ICDF Complex. Potable water and soap are available at the ICDF Complex for personnel to wash their hands and faces.

Industrial waste materials will not be allowed to accumulate at the ICDF operations area. Appropriate containers for industrial waste will be maintained at the ICDF. Personnel should make every attempt to minimize waste through judicious use of consumable materials. All ICDF personnel are expected to make good housekeeping a priority at the ICDF.



## **12. RECORDKEEPING REQUIREMENTS**

This section lists the recordkeeping requirements necessary for this project.

### **12.1 Industrial Hygiene and Radiological Monitoring Records**

The assigned BBWI IH will only record airborne monitoring and sampling data (both area and personal) taken by BBWI collected by BBWI for ICDF operational exposure assessments in the INEEL Hazards Assessment and Sampling System (HASS) database. Subcontractor IH data will be recorded and maintained in records as required by the subcontract; these data will be available for review and use by BBWI. All monitoring and sampling equipment will be maintained and calibrated in accordance with INEEL procedures, subcontract requirements and manufacturer specifications. Industrial hygiene airborne monitoring and sampling exposure assessment data are treated as limited access information and maintained by the BBWI IH in accordance with applicable company manuals.

The assigned RCT maintains a logbook of radiological monitoring, daily project operational activities, and radiological survey records. Radiological monitoring records are maintained in accordance with applicable company manuals. A log is also maintained of daily source checks and checks for survey instrumentation having current calibration.

All health, safety, and radiological records, including inspections, will be maintained in accordance with the appropriate and applicable requirements as identified in applicable company manuals and applicable ICDF supplements.

### **12.2 Records Management**

The ICP ARDC office organizes and maintains data and reports generated by field activities. The ARDC office maintains a supply of all controlled documents and provides a documented system for the control and release of controlled documents, reports, and records. Copies of project plans, this HASP, the quality program plan, the Quality Assurance Project Plan (QAPjP), and other documents pertaining to these operations are maintained in the project file by the ICP ARDC office.

The assigned RCT maintains a logbook of all source checks, verification that calibration of available survey instruments is current, radiological monitoring, daily site operational activities, and radiological survey records. Radiological monitoring records are maintained according to applicable company policies and procedures.

The assigned BBWI IH will record airborne monitoring and/or sampling data (both area and personal) taken by BBWI and input the information into the HASS if required to be collected. Subcontractor IH data will be recorded and maintained in records as required by the subcontract, these data will always be available for review and use by BBWI. All monitoring and sampling equipment shall be maintained and calibrated per BBWI procedures and the manufacturer's specifications. Industrial hygiene airborne monitoring and sampling data are treated as limited access information and maintained by the IH per applicable company manuals.

All additional ICDF records will be maintained in accordance with applicable federal, state, companywide manuals, and facility-specific supplementals.

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